2003

C SERIES

CHEVROLET

The 2003 Chevrolet C-Series Owner's Manual

1-1 Seats and Restraint Systems
This section tells you how to use your seats and safety belts properly. It also explains the air bag system.

2-1 Features and Controls
This section explains how to start and operate your vehicle.

3-1 Comfort Controls and Audio Systems
This section tells you how to adjust the ventilation and comfort controls and how to operate your audio system.

4-1 Your Driving and the Road
Here you'll find helpful information and tips about the road and how to drive under different conditions.

5-1 Problems on the Road
This section tells you what to do if you have a problem while driving, such as a flat tire or overheated engine, etc.

6-1 Service and Appearance Care
Here the manual tells you how to keep your vehicle running properly and looking good.

7-1 Maintenance Schedule
This section tells you when to perform vehicle maintenance and what fluids and lubricants to use.

8-1 Customer Assistance Information
This section tells you how to contact Chevrolet for assistance and how to get service and owner publications. It also gives you information on "Reporting Safety Defects" on page 8-4.

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Please keep this manual in your vehicle, so it will be there if you ever need it when you’re on the road. If you sell the vehicle, please leave this manual in it so the new owner can use it.

We support voluntary technician certification.

Litho in U.S.A.
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How to Use this Manual

Many people read their owner's manual from beginning to end when they first receive their new vehicle. If you do this, it will help you learn about the features and controls for your vehicle. In this manual, you'll find that pictures and words work together to explain things quickly.

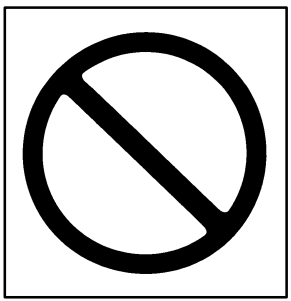
Safety Warnings and Symbols

You will find a number of safety cautions in this book. We use a box and the word CAUTION to tell you about things that could hurt you if you were to ignore the warning.

⚠ CAUTION:

These mean there is something that could hurt you or other people.

In the caution area, we tell you what the hazard is. Then we tell you what to do to help avoid or reduce the hazard. Please read these cautions. If you don't, you or others could be hurt.



You will also find a circle with a slash through it in this book. This safety symbol means "Don't," "Don't do this" or "Don't let this happen."

Vehicle Damage Warnings

Also, in this book you will find these notices:

NOTICE:

These mean there is something that could damage your vehicle.

In the notice area, we tell you about something that can damage your vehicle. Many times, this damage would not be covered by your warranty, and it could be costly. But the notice will tell you what to do to help avoid the damage.

When you read other manuals, you might see CAUTION and NOTICE warnings in different colors or in different words.

You'll also see warning labels on your vehicle. They use the same words, CAUTION or NOTICE.

Vehicle Symbols

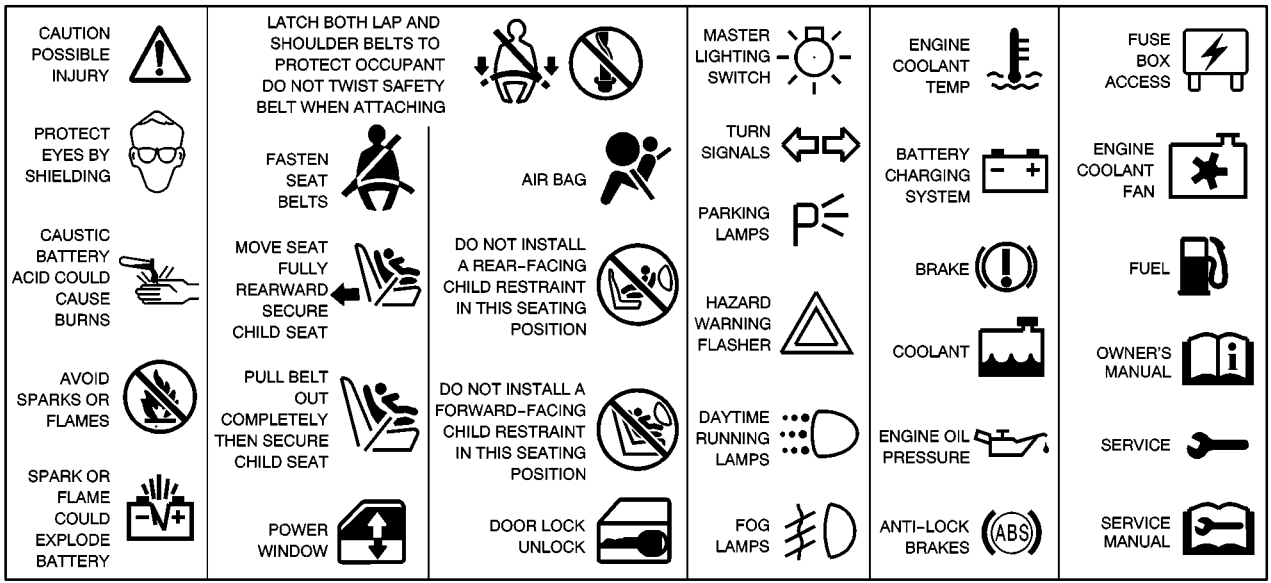
Your vehicle may be equipped with components and labels that use symbols instead of text. Symbols, used on your vehicle, are shown along with the text describing the operation or information relating to a specific component, control, message, gage or indicator.

If you need help figuring out a specific name of a component, gage or indicator reference the following topics in the Index:

- "Instrument Panel"
- "Comfort Controls"
- "Audio Systems"

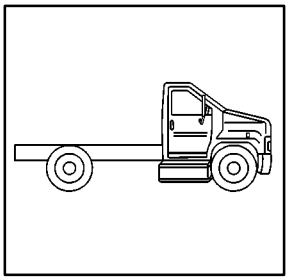
Also see "Warning Lights and Gages" in the Index.

Here are some examples of symbols you may find on your vehicle:



Model Reference

This manual contains information which covers conventional cab models as shown. Most models are unfinished from the factory.



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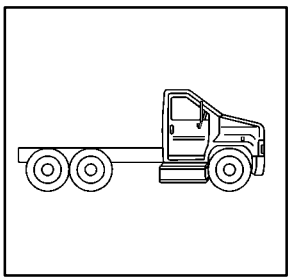

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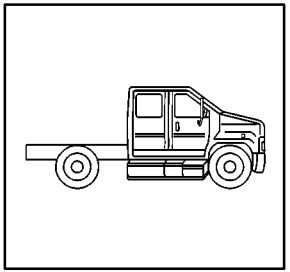

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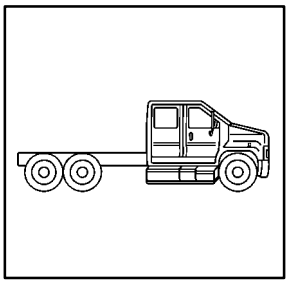

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Since C-Series models delivered from the factory are finished in a variety of ways by a number of companies, you'll probably find other manuals in your finished vehicle. These manuals are put there by the companies that have added components or equipment to the C-Series model. Read all these materials -- as well as this manual -- carefully, to get all of the information on your vehicle.

Section 1 Seats and Restraint Systems

Here you'll find information about the seats in your vehicle and how to use your safety belts properly. You can also learn about some things you should *not* do with air bags and safety belts.

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1-8 Safety Belts: They're for Everyone
1-12 Here Are Questions Many People Ask About Safety Belts -- and the Answers
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Seats and Seat Controls

This section tells you about the seats in your vehicle and how to adjust them. It also tells you about reclining front seatbacks.

⚠ CAUTION:

You can lose control of the vehicle if you try to adjust the seat while the vehicle is moving. The sudden movement could startle and confuse you, or make you push a pedal when you don't want to. Adjust the driver's seat only when the vehicle is not moving.

Bucket Seats (If Equipped)

If your vehicle has bucket seats, also known as static seats, you can adjust them forward or rearward with the lever located at the front of the seat.

To adjust the seat, pull the lever up to release the seat bottom. Slide the seat to where you want it and release the lever. Then try to move the seat with your body, to make sure the seat is locked in place.

Split Bench Seat (If Equipped)

If your vehicle has a split bench seat, your seat is fixed and is not able to be adjusted.

Air Suspension Seats (If Equipped)

If your vehicle has the low-back suspension seat, there are six ways you can adjust the seat.

If your vehicle has the high-back air suspension seat, there are five ways you can adjust the seat.

Height Adjustment

The suspension seat height adjustment lever is located on the front inboard side of the seat.

To adjust the height of the air suspension seat, pull the lever up to inflate. Push the lever down to deflate.

The seat cushion itself can also be raised or lowered.

The seat cushion height adjustment handle is located underneath the seat, in the front.

To adjust the height of the cushion, lift the cushion height adjustment handle up and pull it forward. You can choose between two settings.

Lumbar Adjustments

The lumbar adjustment knob is located on the seatback, on the inboard side of the driver's seat and on the outboard side of the passenger's seat.

To get more support in the lumbar area of your back, turn the lumbar adjustment knob clockwise. To decrease the amount of lumbar support, turn the knob counterclockwise.

Seatback Adjustment

The seatback adjustment knob is located on the inboard side of the driver's and passenger's seat cushions.

To tilt the seatback rearward, turn the knob counterclockwise. Turn the knob clockwise to tilt the seatback forward.

Fore-and-Aft Adjustment

The fore-and-aft adjustment lever is located underneath the seat, in the front.

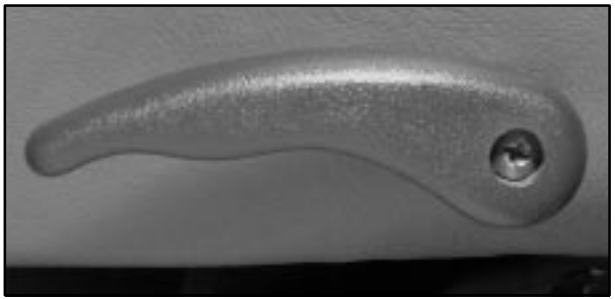
To slide the seat forward or rearward, move the lever toward the driver's door. The seat will lock in at 1/2 inch (1.5 cm) increments.

Chugger-Snubber Lock-Out Feature (If Equipped)

If your vehicle has this feature, the handle is located on the outboard sides of the driver's and passenger's seats.

Move the handle down to minimize any backslap experienced while in tractor/trailer operation or while operating a dump truck application. This feature is only available on low-back seats.

Reclining Front Seatbacks (If Equipped)



If your vehicle is equipped with bucket seats, you can recline the seatbacks. The lever is located on the outboard side of the seat cushion.

To recline the seatback, lift the lever and use your body to move the seatback. Release the lever to lock the seatback where you want it. Lean forward and pull up on the lever to return the seatback to an upright position.

But don’t have a seatback reclined if your vehicle is moving.

⚠ CAUTION:

Sitting in a reclined position when your vehicle is in motion can be dangerous. Even if you buckle up, your safety belts can’t do their job when you’re reclined like this.

The shoulder belt can’t do its job because it won’t be against your body. Instead, it will be in front of you. In a crash you could go into it, receiving neck or other injuries.

The lap belt can’t do its job either. In a crash the belt could go up over your abdomen. The belt forces would be there, not at your pelvic bones. This could cause serious internal injuries.

For proper protection when the vehicle is in motion, have the seatback upright. Then sit well back in the seat and wear your safety belt properly.

Rear Seats (Crew Cab®)

Folding the Rear Seat

The Crew Cab's rear bench seat can be folded down to provide more cargo space.

To fold down the seatback, pull this nylon strap located on the rear of the seat, while pulling the seatback down.

To raise a seatback, pull the nylon strap while raising the seatback until it locks upright.

After raising a seatback to an upright position, push and pull on the seatback to check that it is locked in place.

Safety Belts: They're for Everyone

This part of the manual tells you how to use safety belts properly. It also tells you some things you should not do with safety belts.

And it explains the air bag system.

⚠ CAUTION:

Don't let anyone ride where he or she can't wear a safety belt properly. If you are in a crash and you're not wearing a safety belt, your injuries can be much worse. You can hit things inside the vehicle or be ejected from it. You can be seriously injured or killed. In the same crash, you might not be if you are buckled up. Always fasten your safety belt, and check that your passengers' belts are fastened properly too.

⚠ CAUTION:

It is extremely dangerous to ride in a cargo area, inside or outside of a vehicle. In a collision, people riding in these areas are more likely to be seriously injured or killed. Do not allow people to ride in any area of your vehicle that is not equipped with seats and safety belts. Be sure everyone in your vehicle is in a seat and using a safety belt properly.

Your vehicle has a light that comes on as a reminder to buckle up. See “Safety Belt Reminder Light” in the Index.

In most states and all Canadian provinces, the law says to wear safety belts. Here’s why: *They work.*

You never know if you’ll be in a crash. If you do have a crash, you don’t know if it will be a bad one.

A few crashes are mild, and some crashes can be so serious that even buckled up a person wouldn’t survive. But most crashes are in between. In many of them, people who buckle up can survive and sometimes walk away. Without belts they could have been badly hurt or killed.

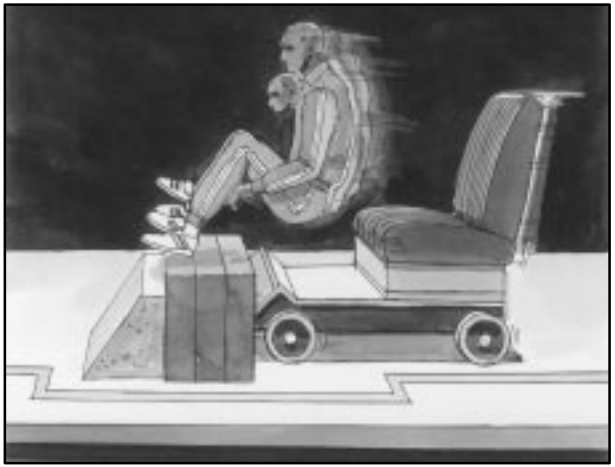
After more than 30 years of safety belts in vehicles, the facts are clear. In most crashes buckling up does matter ... a lot!

Why Safety Belts Work

Q: **Aren't safety belts for kids?**

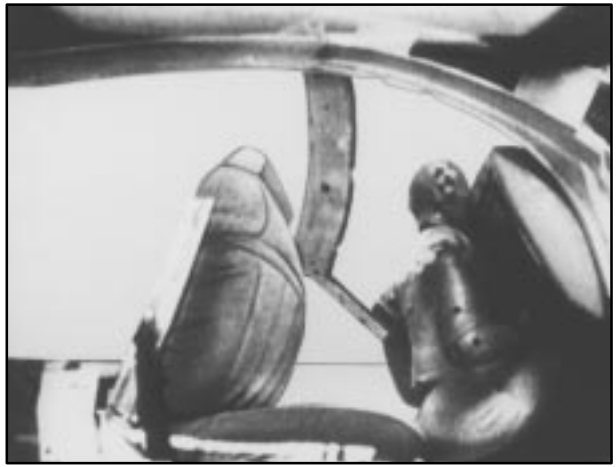
A: Yes. And they're for adult truckers, and anyone else who rides in your vehicle.

Here's why: when your vehicle goes, say, 30 mph (50 km/h), so do you and your passengers.



If the vehicle hits something, it stops -- right then. But nothing stops the people. They keep moving.

Then something will stop them. It could be the windshield.



Or it could be the instrument panel.

Now, what if you and your passengers were to give that big vehicle a chance to deal with the force of the impact, instead of you?

With belts, you slow down as the vehicle does. You get more time to stop.

You stop over more distance, and your strongest bones take the forces. Safety belts are for everyone.

Here Are Questions Many People Ask About Safety Belts -- and the Answers

Q: **Won't I be trapped in the vehicle after an accident if I'm wearing a safety belt?**

A: You *could* be -- whether you're wearing a safety belt or not. But you can unbuckle a safety belt, even if you're upside down. And your chance of being conscious during and after an accident, so you *can* unbuckle and get out, is *much* greater if you are belted.

Q: **If my vehicle has air bags, why should I have to wear safety belts?**

A: Air bags are in many vehicles today and will be in most of them in the future. But they are supplemental systems only; so they work *with* safety belts -- not instead of them. Every air bag system ever offered for sale has required the use of safety belts. Even if you're in a vehicle that has air bags, you still have to buckle up to get the most protection. That's true not only in frontal collisions, but especially in side and other collisions.

Q: If I'm a good driver, and I never drive far from home, why should I wear safety belts?

A: You may be an excellent driver, but if you're in an accident -- even one that isn't your fault -- you and your passengers can be hurt. Being a good driver doesn't protect you from things beyond your control, such as bad drivers.

Most accidents occur within 25 miles (40 km) of home. And the greatest number of serious injuries and deaths occur at speeds of less than 40 mph (65 km/h).

Safety belts are for everyone.

How to Wear Safety Belts Properly

Adults

This part is only for people of adult size.

Be aware that there are special things to know about safety belts and children. And there are different rules for smaller children and babies. If a child will be riding in your vehicle, see the part of this manual called "Children." Follow those rules for everyone's protection.

First, you'll want to know which restraint systems your vehicle has.

We'll start with the driver position.

Driver Position

This part describes the driver's restraint system.

Lap-Shoulder Belt

The driver has a lap-shoulder belt. Here's how to wear it properly.

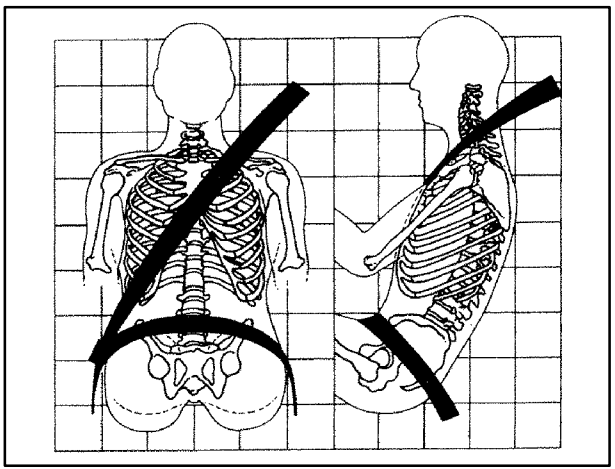
1. Close and lock the door.
2. Adjust the seat so you can sit up straight. To see how, see "Seats" in the Index.

3. Pick up the latch plate and pull the belt across you. Don't let it get twisted. The shoulder belt may lock if you pull the belt across you very quickly. If this happens, let the belt go back slightly to unlock it. Then pull the belt across you more slowly.

4. Push the latch plate into the buckle until it clicks. Pull up on the latch plate to make sure it is secure.

   If the belt isn't long enough, see "Safety Belt Extender" at the end of this section.

Make sure the release button on the buckle is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.



The lap part of the belt should be worn low and snug on the hips, just touching the thighs. In a crash, this applies force to the strong pelvic bones. And you'd be less likely to slide under the lap belt. If you slid under it, the belt would apply force at your abdomen. This could cause serious or even fatal injuries. The shoulder belt should go over the shoulder and across the chest. These parts of the body are best able to take belt restraining forces.

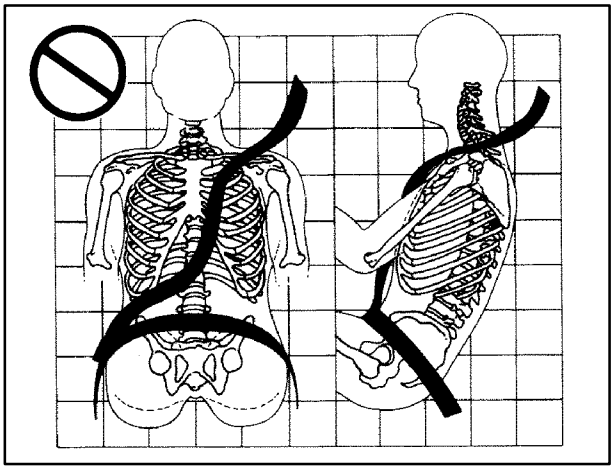
The safety belt locks if there's a sudden stop or a crash, or if you pull the belt very quickly out of the retractor.

Shoulder Belt Height Adjuster

Before you begin to drive, move the shoulder belt adjuster to the height that is right for you. Adjust the height so that the shoulder portion of the belt is centered on your shoulder. The belt should be away from your face and neck, but not falling off your shoulder.

To move it down, push in at the top of the arrows and move the height adjuster to the desired position. You can move the adjuster up just by pushing up on the shoulder belt guide. After you move the adjuster to where you want it, try to move it down without pushing in to make sure it has locked into position.

Q: **What's wrong with this?**

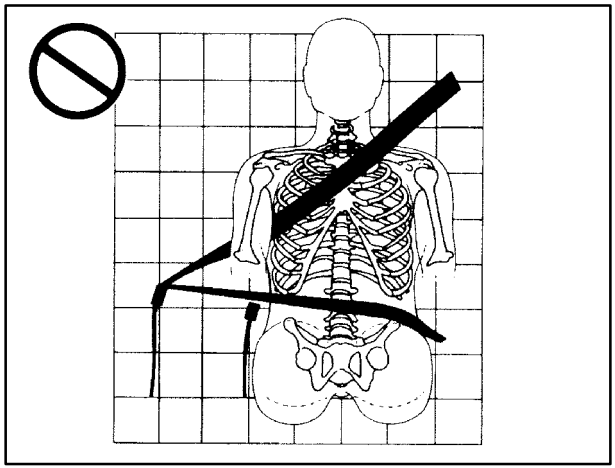


A: The shoulder belt is too loose. It won't give nearly as much protection this way.

⚠ CAUTION:

You can be seriously hurt if your shoulder belt is too loose. In a crash, you would move forward too much, which could increase injury. The shoulder belt should fit against your body.

Q: **What's wrong with this?**

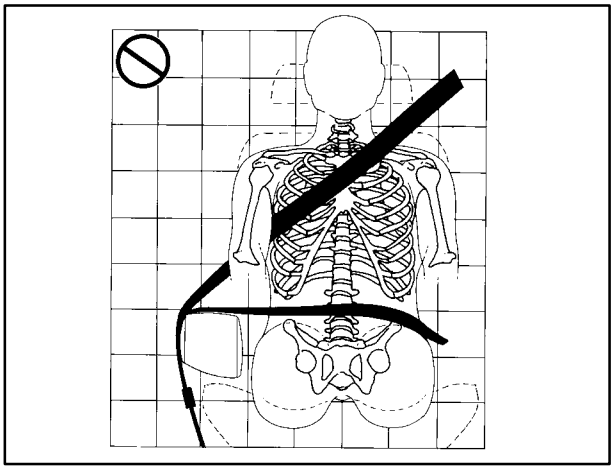


A: The belt is buckled in the wrong place.

⚠ CAUTION:

You can be seriously injured if your belt is buckled in the wrong place like this. In a crash, the belt would go up over your abdomen. The belt forces would be there, not at the pelvic bones. This could cause serious internal injuries. Always buckle your belt into the buckle nearest you.

Q: **What's wrong with this?**

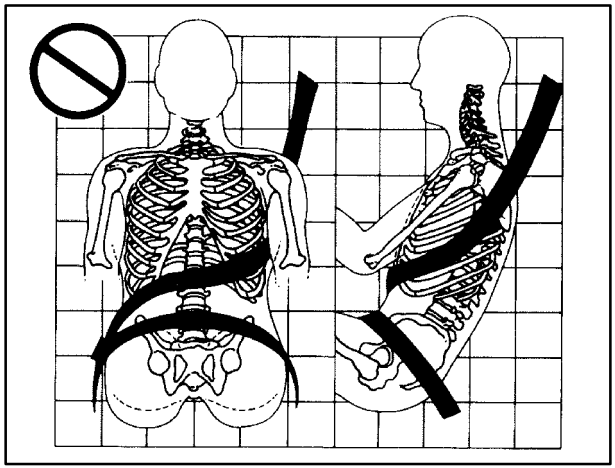


A: The belt is over an armrest.

⚠ CAUTION:

You can be seriously injured if your belt goes over an armrest like this. The belt would be much too high. In a crash, you can slide under the belt. The belt force would then be applied at the abdomen, not at the pelvic bones, and that could cause serious or fatal injuries. Be sure the belt goes under the armrests.

Q: **What's wrong with this?**

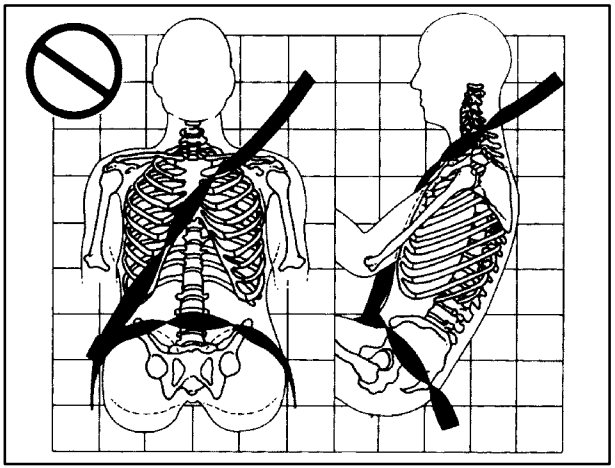


A: The shoulder belt is worn under the arm. It should be worn over the shoulder at all times.

⚠ CAUTION:

You can be seriously injured if you wear the shoulder belt under your arm. In a crash, your body would move too far forward, which would increase the chance of head and neck injury. Also, the belt would apply too much force to the ribs, which aren't as strong as shoulder bones. You could also severely injure internal organs like your liver or spleen.

Q: **What's wrong with this?**



A: The belt is twisted across the body.

⚠ CAUTION:

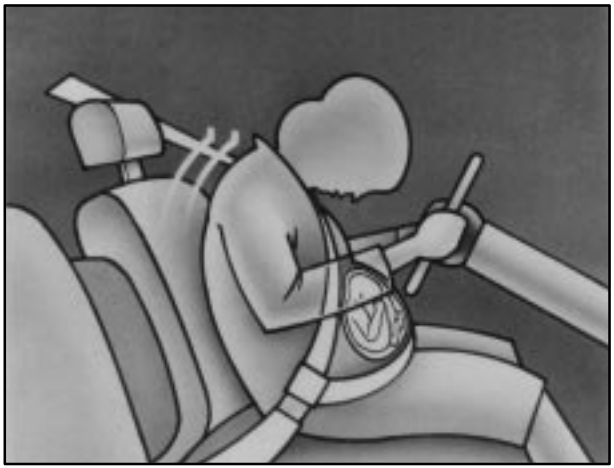
You can be seriously injured by a twisted belt. In a crash, you wouldn't have the full width of the belt to spread impact forces. If a belt is twisted, make it straight so it can work properly, or ask your dealer to fix it.

To unlatch the belt, just push the button on the buckle. The belt should go back out of the way.

Before you close the door, be sure the belt is out of the way. If you slam the door on it, you can damage both the belt and your vehicle.

Safety Belt Use During Pregnancy

Safety belts work for everyone, including pregnant women. Like all occupants, they are more likely to be seriously injured if they don't wear safety belts.



A pregnant woman should wear a lap-shoulder belt, and the lap portion should be worn as low as possible, below the rounding, throughout the pregnancy.

The best way to protect the fetus is to protect the mother. When a safety belt is worn properly, it's more likely that the fetus won't be hurt in a crash. For pregnant women, as for anyone, the key to making safety belts effective is wearing them properly.

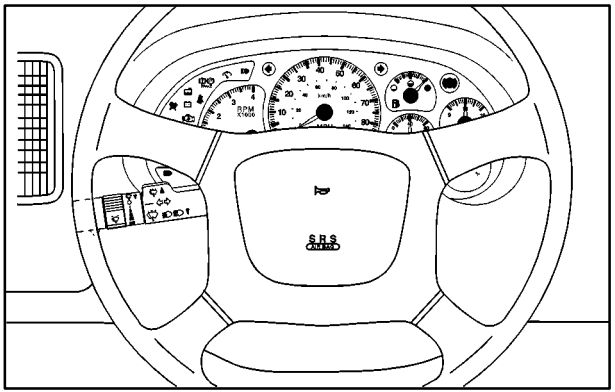
Right Front Passenger Position

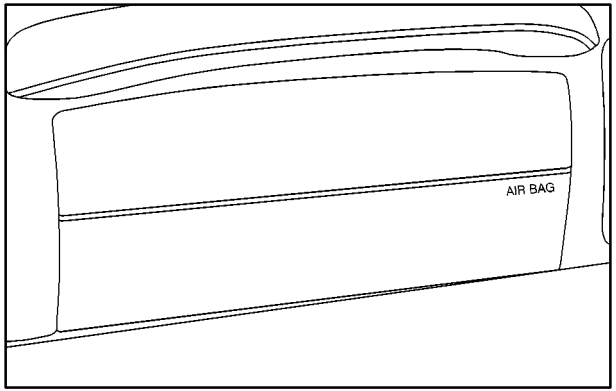
To learn how to wear the right front passenger's safety belt properly, see "Driver Position" earlier in this section.

The right front passenger's safety belt works the same way as the driver's safety belt. If your vehicle has a static seat in this position and if you ever pull the shoulder portion of the belt out all the way, you will engage the child restraint locking feature. If this happens, just let the belt go back all the way and start again.

Air Bag System

This part explains the air bag system.





If it says AIR BAG on the middle part of the steering wheel and AIR BAG on the instrument panel in front of the right front passenger's seat, your vehicle has two air bags -- one air bag for the driver and another air bag for the right front passenger.

If it says AIR BAG on the middle part of the steering wheel but it doesn't say AIR BAG on the instrument panel in front of the right front passenger's seat, your vehicle has an air bag for the driver only.

If it says AIR BAG on the middle part of the steering wheel, but there is no right front passenger seat, your vehicle has an air bag for the driver only.

If it doesn't say AIR BAG on the middle part of the steering wheel, your vehicle doesn't have air bags.

Frontal air bags are designed to help reduce the risk of injury from the force of an inflating air bag. But these air bags must inflate very quickly to do their job and comply with federal regulations.

Here are the most important things to know about the air bag system:

⚠ CAUTION:

You can be severely injured or killed in a crash if you aren't wearing your safety belt -- even if you have air bags. Wearing your safety belt during a crash helps reduce your chance of hitting things inside the vehicle or being ejected from it. Air bags are designed to work with safety belts, but don't replace them. Air bags are designed to work only in moderate to severe crashes where the front of your vehicle hits something. They aren't designed to inflate at all in rollover, rear or low-speed frontal crashes, or in many side crashes. And, for some unrestrained occupants, air bags may provide less protection in frontal crashes than more forceful air bags have provided in the past. Everyone in your vehicle should wear a safety belt properly -- whether or not there's an air bag for that person.

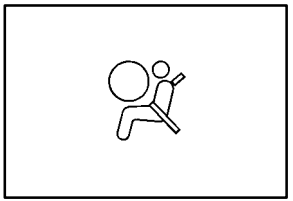
⚠ CAUTION:

Air bags inflate with great force, faster than the blink of an eye. If you're too close to an inflating air bag, as you would be if you were leaning forward, it could seriously injure you. Safety belts help keep you in position before and during a crash. Always wear your safety belt, even with air bags. The driver should sit as far back as possible while still maintaining control of the vehicle.

If your vehicle has an air bag for the right front passenger, please read this:

⚠ CAUTION:

Anyone who is up against, or very close to, any air bag when it inflates can be seriously injured or killed. Air bags plus lap-shoulder belts offer the best protection for adults, but not for young children and infants. Neither the vehicle's safety belt system nor its air bag system is designed for them. Young children and infants need the protection that a child restraint system can provide. Always secure children properly in your vehicle. To read how, see the part of this manual called "Children."



There is an air bag readiness light on the instrument panel, which shows the air bag symbol.

The system checks the air bag electrical system for malfunctions. The light tells you if there is an electrical problem. See "Air Bag Readiness Light" in the Index for more information.

How the Air Bag System Works

Where are the air bags?

The driver's air bag is in the middle of the steering wheel.

The right front passenger's air bag is in the instrument panel on the passenger's side.

⚠ CAUTION:

If something is between an occupant and an air bag, the bag might not inflate properly or it might force the object into that person causing severe injury or even death. The path of an inflating air bag must be kept clear. Don't put anything between an occupant and an air bag, and don't attach or put anything on the steering wheel hub or on or near any other air bag covering.

When should an air bag inflate?

An air bag is designed to inflate in a moderate to severe frontal or near-frontal crash. The air bag will inflate only if the impact speed is above the system's designed "threshold level."

In any particular crash, no one can say whether an air bag should have inflated simply because of the damage to a vehicle or because of what the repair costs were. Inflation is determined by the angle of the impact and how quickly the vehicle slows down in frontal or near-frontal impacts.

What makes an air bag inflate?

In an impact of sufficient severity, the air bag sensing system detects that the vehicle is in a crash. The sensing system triggers a release of gas from the inflator, which inflates the air bag. The inflator, air bag and related hardware are all part of the air bag modules inside the steering wheel and in the instrument panel in front of the right front passenger.

How does an air bag restrain?

In moderate to severe frontal or near-frontal collisions, even belted occupants can contact the steering wheel or the instrument panel. Air bags supplement the protection provided by safety belts. Air bags distribute the force of the impact more evenly over the occupant's upper body, stopping the occupant more gradually. But air bags would not help you in many types of collisions, including rollovers, rear impacts and many side impacts, primarily because an occupant's motion is not toward those air bags. Air bags should never be regarded as anything more than a supplement to safety belts, and then only in moderate to severe frontal or near-frontal collisions.

What will you see after an air bag inflates?

After an air bag inflates, it quickly deflates, so quickly that some people may not even realize the air bag inflated. Some components of the air bag module -- the steering wheel hub for the driver's air bag, or the instrument panel for the right front passenger's bag -- will be hot for a short time. The parts of the bag that come into contact with you may be warm, but not too hot to touch. There will be some smoke and dust coming from vents in the deflated air bags. Air bag inflation doesn't prevent the driver from seeing or from being able to steer the vehicle, nor does it stop people from leaving the vehicle.

⚠ CAUTION:

When an air bag inflates, there is dust in the air. This dust could cause breathing problems for people with a history of asthma or other breathing trouble. To avoid this, everyone in the vehicle should get out as soon as it is safe to do so. If you have breathing problems but can't get out of the vehicle after an air bag inflates, then get fresh air by opening a window or door.

In many crashes severe enough to inflate an air bag, windshields are broken by vehicle deformation. Additional windshield breakage may also occur from the right front passenger air bag.

- Air bags are designed to inflate only once. After they inflate, you'll need some new parts for your air bag system. If you don't get them, the air bag system won't be there to help protect you in another crash. A new system will include air bag modules and possibly other parts. The service manual for your vehicle covers the need to replace other parts.
- Your vehicle is equipped with a crash sensing and diagnostic module, which records information about the air bag system. The module records information about the readiness of the system, when the system commands air bag inflation. The module also records speed, engine rpm, brake and throttle data.
- Let only qualified technicians work on your air bag system. Improper service can mean that your air bag system won't work properly. See your dealer for service.

NOTICE:

If you damage the covering for the driver's or the right front passenger's air bag, the bag may not work properly. You may have to replace the air bag module in the steering wheel or both the air bag module and the instrument panel for the right front passenger's air bag. Do not open or break the air bag coverings.

Air Bag Off Switch (Models with Right Front Passenger Air Bag)

If your vehicle has a right front passenger air bag, it has a switch on the instrument panel that you can use to turn off the right front passenger's air bag.

United States

Canada

This switch should only be turned to AIR BAG OFF if the person in the right front passenger's position is a member of a passenger risk group identified by the national government as follows:

Infant. *An infant (less than 1 year old) must ride in the front seat because:*

- *my vehicle has no rear seat;*
- *my vehicle has a rear seat too small to accommodate a rear-facing infant seat; or*
- *the infant has a medical condition which, according to the infant's physician, makes it necessary for the infant to ride in the front seat so that the driver can constantly monitor the child's condition.*

Child age 1 to 12. *A child age 1 to 12 must ride in the front seat because:*

- *my vehicle has no rear seat;*
- *although children ages 1 to 12 ride in the rear seat(s) whenever possible, children ages 1 to 12 sometimes must ride in the front because no space is available in the rear seat(s) of my vehicle; or*
- *the child has a medical condition which, according to the child's physician, makes it necessary for the child to ride in the front seat so that the driver can constantly monitor the child's condition.*

Medical Condition. *A passenger has a medical condition which, according to his or her physician:*

- *causes the passenger air bag to pose a special risk for the passenger; and*
- *makes the potential harm from the passenger air bag in a crash greater than the potential harm from turning off the air bag and allowing the passenger, even if belted, to hit the dashboard or windshield in a crash.*

⚠ CAUTION:

If the right front passenger's air bag is turned off for a person who isn't in a risk group identified by the national government, that person won't have the extra protection of an air bag. In a crash, the air bag wouldn't be able to inflate and help protect the person sitting there. Don't turn off the passenger's air bag unless the person sitting there is in a risk group.

United States

Canada

To turn off the right front passenger's air bag, insert your ignition key into the switch, push in, and move the switch to the off position.

The AIR BAG OFF light will come on to let you know that the right front passenger's air bag is off. The right front passenger's air bag will remain off until you turn it back on again, and the AIR BAG OFF light will stay on to remind you that the air bag is off.

⚠ CAUTION:

If the air bag readiness light ever comes on when you have turned off the air bag, it means that something may be wrong with the air bag system. The right front passenger's air bag could inflate even though the switch is off. If this ever happens, don't let anyone whom the national government has identified as a member of a passenger air bag risk group sit in the right front passenger's position (for example, don't secure a rear-facing child restraint in your vehicle) until you have your vehicle serviced.

United States

Canada

To turn the right front passenger's air bag on again, insert your ignition key into the switch, push in, and move the switch to the on position.

Servicing Your Air Bag-Equipped Vehicle

Air bags affect how your vehicle should be serviced. There are parts of the air bag system in several places around your vehicle. You don't want the system to inflate while someone is working on your vehicle. Your dealer and the service manual have information about servicing your vehicle and the air bag system. To purchase a service manual, see "Service and Owner Publications" in the Index.

⚠ CAUTION:

For up to 10 minutes after the ignition key is turned off and the battery is disconnected, an air bag can still inflate during improper service. You can be injured if you are close to an air bag when it inflates. Avoid yellow wires, wires wrapped with yellow tape or yellow connectors. They are probably part of the air bag system. Be sure to follow proper service procedures, and make sure the person performing work for you is qualified to do so.

The air bag system does not need regular maintenance.

Adding Equipment to Your Air Bag-Equipped Vehicle

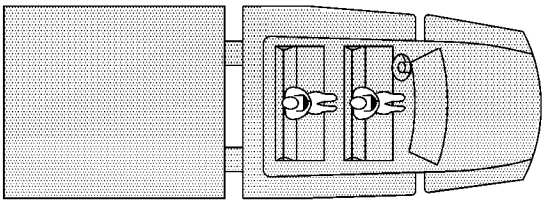
Q: **If I add a push bumper or a bicycle rack to the front of my vehicle, will it keep the air bags from working properly?**

A: As long as the push bumper or bicycle rack is attached to your vehicle so that the vehicle's basic structure isn't changed, it's not likely to keep the air bags from working properly in a crash.

Q: **Is there anything I might add to the front of the vehicle that could keep the air bags from working properly?**

A: Yes. If you add things that change your vehicle's frame, bumper system, front end sheet metal or height, they may keep the air bag system from working properly. Also, the air bag system may not work properly if you relocate any of the air bag sensors. If you have any questions about this, you should contact Customer Assistance before you modify your vehicle. The phone numbers and addresses for Customer Assistance are in Step Two of the Customer Satisfaction Procedure in this manual. See "Customer Satisfaction Procedure" in the Index.

Center Passenger Position



Lap Belt

If your vehicle has a front bench seat, someone can sit in the center position. If your vehicle is a Crew Cab model, someone can also sit in the center rear position.

When you sit in a center seating position, you have a lap safety belt, which has no retractor. To make the belt longer, tilt the latch plate and pull it along the belt.

To make the belt shorter, pull its free end as shown until the belt is snug.

Buckle, position and release it the same way as the lap part of a lap-shoulder belt. If the belt isn't long enough, see "Safety Belt Extender" at the end of this section.

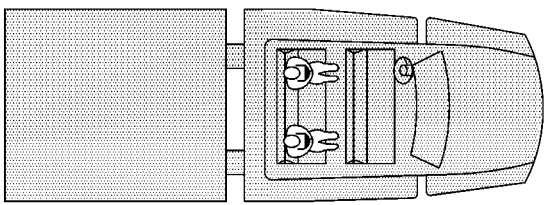
Make sure the release button on the buckle is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.

Rear Seat Passengers

It's very important for rear seat passengers to buckle up! Accident statistics show that unbelted people in the rear seat are hurt more often in crashes than those who are wearing safety belts.

Rear passengers who aren't safety belted can be thrown out of the vehicle in a crash. And they can strike others in the vehicle who are wearing safety belts.

Rear Seat Outside Passenger Positions (Crew Cab Models)



Lap-Shoulder Belt

The positions next to the windows have lap-shoulder belts. Here's how to wear one properly.

1. Pick up the latch plate and pull the belt across you. Don't let it get twisted.

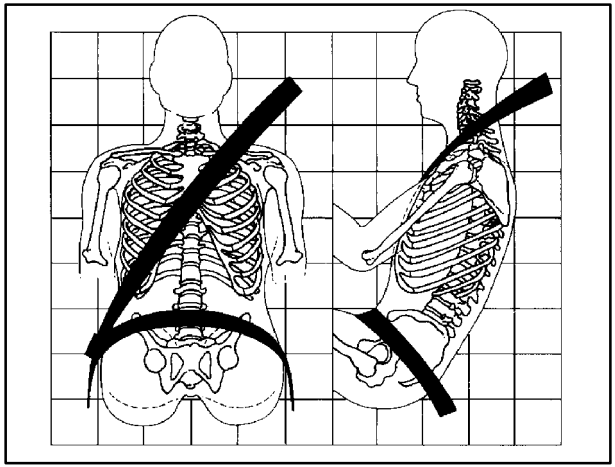
   The shoulder belt may lock if you pull the belt across you very quickly. If this happens, let the belt go back slightly to unlock it. Then pull the belt across you more slowly.

2. Push the latch plate into the buckle until it clicks.

   Pull up on the latch plate to make sure it is secure.

   When the shoulder belt is pulled out all the way, it will lock. If it does, let it go back all the way and start again. If the belt is not long enough, see "Safety Belt Extender" at the end of this section. Make sure the release button on the buckle is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.

3. To make the lap part tight, pull down on the buckle end of the belt as you pull up on the shoulder part.



The lap part of the belt should be worn low and snug on the hips, just touching the thighs. In a crash, this applies force to the strong pelvic bones. And you'd be less likely to slide under the lap belt. If you slid under it, the belt would apply force at your abdomen. This could cause serious or even fatal injuries. The shoulder belt should go over the shoulder and across the chest. These parts of the body are best able to take belt restraining forces.

The safety belt locks if there's a sudden stop or a crash, or if you pull the belt very quickly out of the retractor.

Each position next to the windows has a shoulder belt height adjuster. Move the shoulder belt adjuster to the height that is right for you. Adjust the height so that the shoulder portion of the belt is centered on your shoulder. The belt should be away from your face and neck, but not falling off your shoulder.

To move it down, push in at the top of the arrows and move the height adjuster to the desired position. You can move the adjuster up just by pushing up on the shoulder belt guide. After you move the adjuster to where you want it, try to move it down without pushing in to make sure it has locked into position.

⚠ CAUTION:

You can be seriously hurt if your shoulder belt is too loose. In a crash, you would move forward too much, which could increase injury. The shoulder belt should fit against your body.

To unlatch the belt, just push the button on the buckle.

Children

Everyone in a vehicle needs protection! This includes infants and all other children. Neither the distance traveled nor the age and size of the traveler changes the need, for everyone, to use safety restraints. In fact, the law in every state in the United States and in every Canadian province says children up to some age must be restrained while in a vehicle.

Infants and Young Children

Every time infants and young children ride in vehicles, they should have the protection provided by the appropriate restraint. Young children should not use the vehicle's safety belts, unless there is no other choice.

⚠ CAUTION:

People should never hold a baby in their arms while riding in a vehicle. A baby doesn't weigh much -- until a crash. During a crash a baby will become so heavy it is not possible to hold it. For example, in a crash at only 25 mph (40 km/h), a 12-lb. (5.5 kg) baby will suddenly become a 240-lb. (110 kg) force on a person's arms. A baby should be secured in an appropriate restraint.

⚠ CAUTION:

Children who are up against, or very close to, any air bag when it inflates can be seriously injured or killed. Air bags plus lap-shoulder belts offer outstanding protection for adults and older children, but not for young children and infants. Neither the vehicle's safety belt system nor its air bag system is designed for them. Young children and infants need the protection that a child restraint system can provide.

Q: What are the different types of add-on child restraints?

A: Add-on child restraints, which are purchased by the vehicle's owner, are available in four basic types. Selection of a particular restraint should take into consideration not only the child's weight, height and age but also whether or not the restraint will be compatible with the motor vehicle in which it will be used.

For most basic types of child restraints, there are many different models available. When purchasing a child restraint, be sure it is designed to be used in a motor vehicle. If it is, the restraint will have a label saying that it meets federal motor vehicle safety standards.

The restraint manufacturer's instructions that come with the restraint state the weight and height limitations for a particular child restraint. In addition, there are many kinds of restraints available for children with special needs.

⚠ CAUTION:

Newborn infants need complete support, including support for the head and neck. This is necessary because a newborn infant's neck is weak and its head weighs so much compared with the rest of its body. In a crash, an infant in a rear-facing seat settles into the restraint, so the crash forces can be distributed across the strongest part of an infant's body, the back and shoulders. Infants always should be secured in appropriate infant restraints.

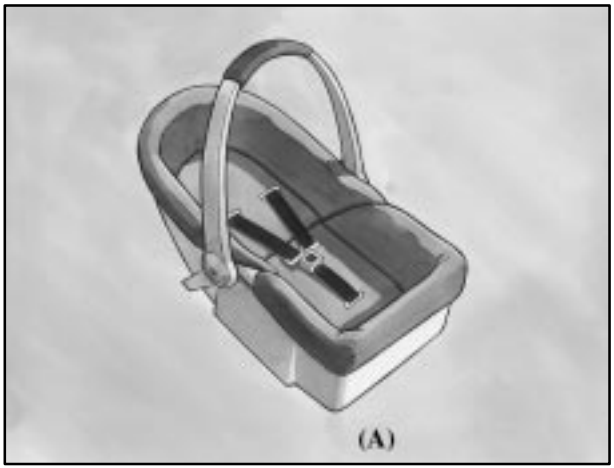
⚠ CAUTION:

The body structure of a young child is quite unlike that of an adult or older child, for whom the safety belts are designed. A young child's hip bones are still so small that the vehicle's regular safety belt may not remain low on the hip bones, as it should. Instead, it may settle up around the child's abdomen. In a crash, the belt would apply force on a body area that's unprotected by any bony structure. This alone could cause serious or fatal injuries. Young children always should be secured in appropriate child restraints.

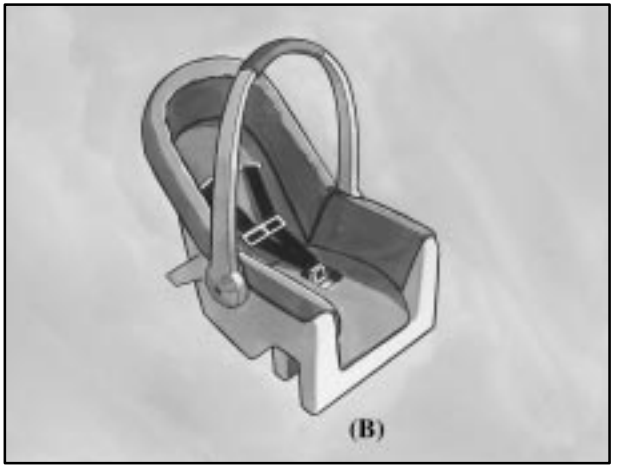
We know securing a child can present real problems in a medium-duty vehicle like yours.

If your vehicle is a regular cab model with an air-suspension seat in the right front passenger's position, there is no place in your vehicle to secure a child restraint. The only answer is to have smaller children make the trip in another vehicle, where they can get the protection they need.

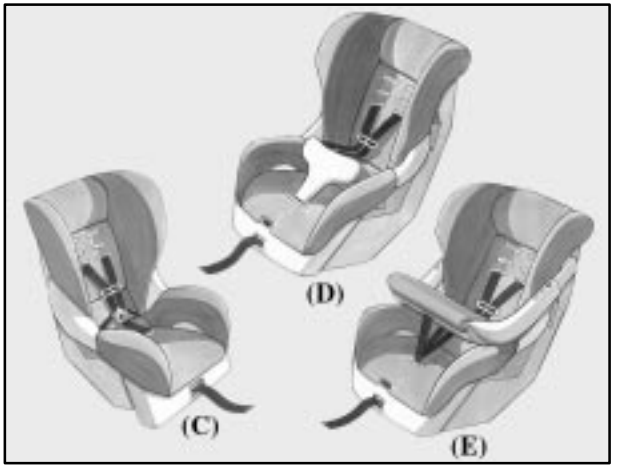
Restraint Systems for Children



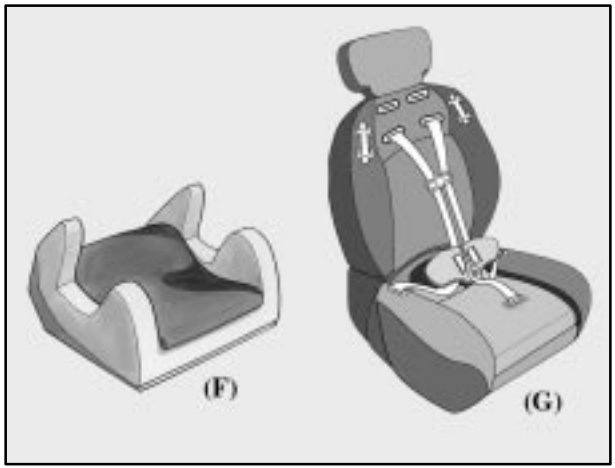
An infant car bed (A), a special bed made for use in a motor vehicle, is an infant restraint system designed to restrain or position a child on a continuous flat surface. Make sure that the infant's head rests toward the center of the vehicle.



A rear-facing infant seat (B) provides restraint with the seating surface against the back of the infant. The harness system holds the infant in place and, in a crash, acts to keep the infant positioned in the restraint.



A forward-facing child seat (C-E) provides restraint for the child's body with the harness and also sometimes with surfaces such as T-shaped or shelf-like shields.



A booster seat (F-G) is a child restraint designed to improve the fit of the vehicle's safety belt system. Some booster seats have a shoulder belt positioner, and some high-back booster seats have a five-point harness. A booster seat can also help a child to see out the window.

Q: How do child restraints work?

A: A child restraint system is any device designed for use in a motor vehicle to restrain, seat, or position children. A built-in child restraint system is a permanent part of the motor vehicle. An add-on child restraint system is a portable one, which is purchased by the vehicle's owner.

For many years, add-on child restraints have used the adult belt system in the vehicle. To help reduce the chance of injury, the child also has to be secured within the restraint. The vehicle's belt system secures the add-on child restraint in the vehicle, and the add-on child restraint's harness system holds the child in place within the restraint.

One system, the three-point harness, has straps that come down over each of the infant's shoulders and buckle together at the crotch. The five-point harness system has two shoulder straps, two hip straps and a crotch strap. A shield may take the place of hip straps. A T-shaped shield has shoulder straps that are attached to a flat pad which rests low against the child's body. A shelf- or armrest-type shield has straps that are attached to a wide, shelf-like shield that swings up or to the side.

When choosing a child restraint, be sure the child restraint is designed to be used in a vehicle. If it is, it will have a label saying that it meets federal motor vehicle safety standards.

Then follow the instructions for the restraint. You may find these instructions on the restraint itself or in a booklet, or both. These restraints use the belt system in your vehicle, but the child also has to be secured within the restraint to help reduce the chance of personal injury. When securing an add-on child restraint, refer to the instructions that come with the restraint which may be on the restraint itself or in a booklet, or both, and to this manual. The child restraint instructions are important, so if they are not available, obtain a replacement copy from the manufacturer.

Where to Put the Restraint (Regular Cab Models)

If your vehicle is a regular cab model with an air-suspension seat in the right front passenger's position, there is no place in your vehicle to secure a child restraint. The only answer is to have smaller children make the trip in another vehicle, where they can get the protection they need.

⚠ CAUTION:

A child restraint cannot be secured properly in an air-suspension type seat. This is because an air-suspension seat is designed to move up and down for an adult passenger. Don't use a child restraint in an air-suspension seat.

If your vehicle is a regular cab model with a static seat in the right front passenger's position, or if it has a bench seat, the child restraint must be secured properly in the right front passenger's seat. If your vehicle has air bags and you want to secure a rear-facing child restraint in the right front passenger's seat, turn off the passenger's air bag. See "Air Bag Off Switch" and "Securing a Child Restraint in the Right Front Seat Position" in the Index for more on this, including important safety information.

⚠ CAUTION:

A child in a rear-facing child restraint can be seriously injured or killed if the right front passenger's air bag inflates. This is because the back of the rear-facing child restraint would be very close to the inflating air bag. Be sure to turn off the air bag before using a rear-facing child restraint in the right front seat position.

Keep in mind that an unsecured child restraint can move around in a collision or sudden stop and injure people in the vehicle -- even when no child is in it.

Where to Put the Restraint (Crew Cab Models)

Accident statistics show that children are safer if they are restrained in the rear rather than the front seat. General Motors, therefore, recommends that child restraints be secured in a rear seat position, including an infant riding in a rear-facing infant seat, a child riding in a forward-facing child seat and an older child riding in a booster seat.

If your vehicle has air bags and you want to secure a rear-facing child restraint in the right front passenger's seat, turn off the passenger's air bag. See "Air Bag Off Switch" and "Securing a Child Restraint in the Right Front Seat Position" in the Index for more on this, including important safety information.

⚠ CAUTION:

A child in a rear-facing child restraint can be seriously injured or killed if the right front passenger's air bag inflates. This is because the back of the rear-facing child restraint would be very close to the inflating air bag. Be sure to turn off the air bag before using a rear-facing child restraint in the right front seat position.

You may secure a forward-facing child restraint in the right front static seat or right front bench seat, but before you do, always move the front passenger seat as far back as it will go. It's better to secure the child restraint in the rear seat.

If your vehicle has an air-suspension seat in the right front passenger's position, do not secure a child restraint there. Here's why:

⚠ CAUTION:

A child restraint cannot be secured properly in an air-suspension type seat. This is because an air-suspension seat is designed to move up and down for an adult passenger. Don't use a child restraint in an air-suspension seat.

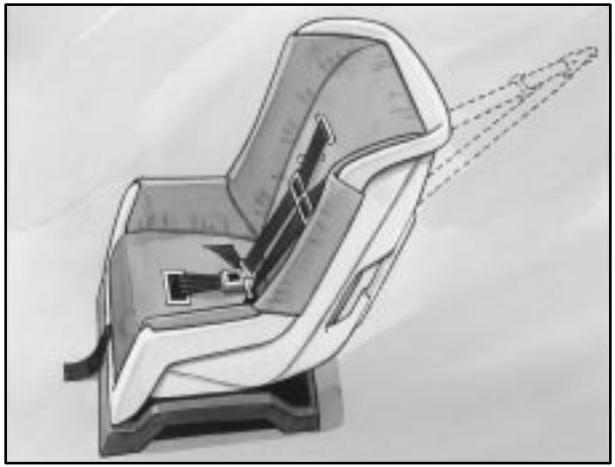
Wherever you install it, be sure to secure the child restraint properly.

Keep in mind that an unsecured child restraint can move around in a collision or sudden stop and injure people in the vehicle -- even when no child is in it.

Top Strap

Some child restraints have a top strap, or "top tether." It can help restrain the child restraint during a collision. For it to work, a top strap must be properly anchored to the vehicle. Some top strap-equipped child restraints are designed for use with or without the top strap being anchored. Others require the top strap always to be anchored. Be sure to read and follow the instructions for your child restraint. If yours requires that the top strap be anchored, don't use the restraint unless it is anchored properly.

If the child restraint does not have a top strap, one can be obtained, in kit form, for many child restraints. Ask the child restraint manufacturer whether or not a kit is available.



In Canada, the law requires that forward-facing child restraints have a top strap, and that the strap be anchored. In the United States, some child restraints also have a top strap. If your child restraint has a top strap, it should be anchored.

Anchor the top strap to one of the following anchor points. Be sure to use an anchor point located on the same side of the vehicle as the seating position where the child restraint will be placed.

⚠ CAUTION:

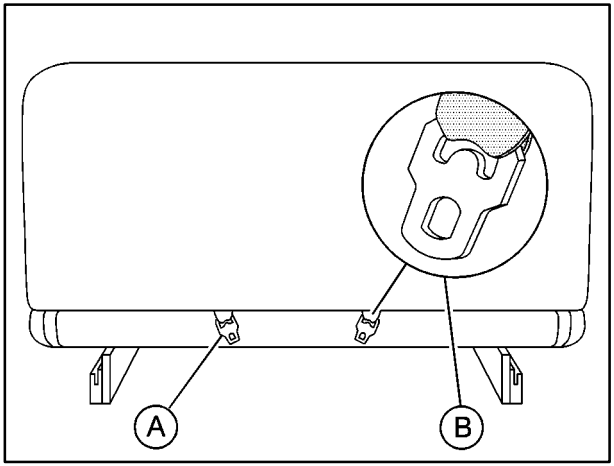
Each top tether bracket is designed to anchor only one child restraint. Attaching more than one child restraint to a single bracket could cause the anchor to come loose or even break during a crash. A child or others could be injured if this happens. To help prevent injury to people and damage to your vehicle, attach only one child restraint per bracket.

Once you have the top strap anchored, you'll be ready to secure the child restraint itself. Tighten the top strap when and as the child restraint manufacturer's instructions say.

Rear Seat Top Strap Anchors (Crew Cab Models)

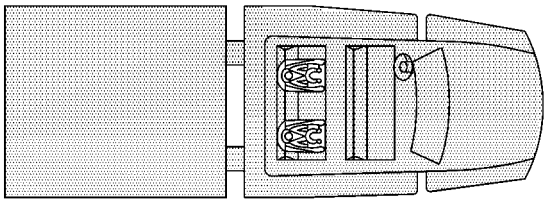
⚠ CAUTION:

Each top tether bracket is designed to anchor only one child restraint. Attaching more than one child restraint to a single bracket could cause the anchor to come loose or even break during a crash. A child or others could be injured if this happens. To help prevent injury to people and damage to your vehicle, attach only one child restraint per bracket.



Anchor the top strap to this bracket. For the left outboard seating position, use anchor point (A). For the right outboard seating position, use anchor point (B). For a center seating position, use either anchor point (A) or (B).

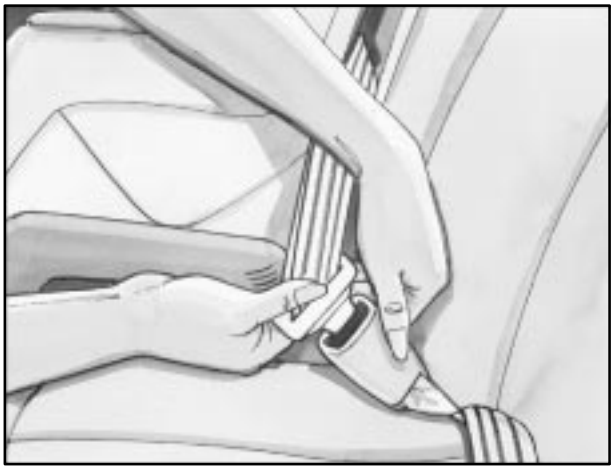
Securing a Child Restraint in a Rear Outside Seat Position (Crew Cab Models)



You'll be using the lap-shoulder belt. See the earlier part about the top strap if the child restraint has one. Be sure to follow the instructions that came with the child restraint. Secure the child in the child restraint when and as the instructions say.

1. Put the restraint on the seat.
2. Pick up the latch plate, and run the lap and shoulder portions of the vehicle's safety belt through or around the restraint. The child restraint instructions will show you how.

   If the shoulder belt goes in front of the child's face or neck, put it behind the child restraint.



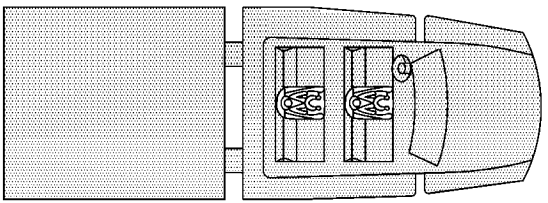
3. Buckle the belt. Make sure the release button is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.

4. Pull the rest of the shoulder belt all the way out of the retractor to set the lock.

5. To tighten the belt, feed the shoulder belt back into the retractor while you push down on the child restraint. If you're using a forward-facing child restraint, you may find it helpful to use your knee to push down on the child restraint as you tighten the belt.
6. Push and pull the child restraint in different directions to be sure it is secure.

To remove the child restraint, just unbuckle the vehicle's safety belt and let it go back all the way. The safety belt will move freely again and be ready to work for an adult or larger child passenger.

Securing a Child Restraint in the Center Rear Seat Position (Crew Cab Models) and Securing a Child Restraint in the Center Front Position (Bench Seat Models without Air Bags)



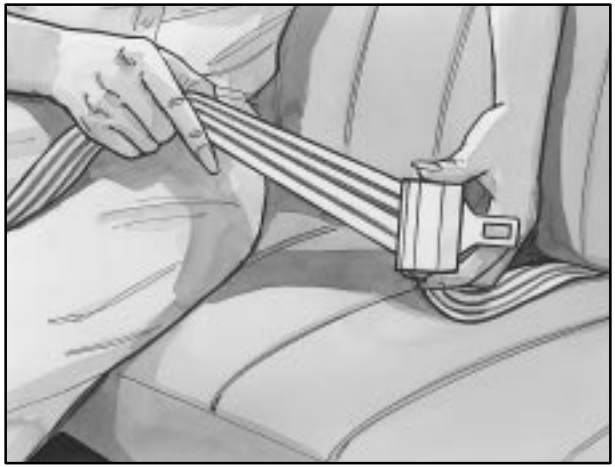
You'll be using the lap belt.

Be sure to follow the instructions that came with the child restraint. Secure the child in the child restraint when and as the instructions say. But don't use the center front passenger position if your vehicle has air bags, or if the child restraint interferes with shifting gears.

⚠ CAUTION:

A child in a child restraint in the center front seat can be badly injured or killed by the right front passenger air bag if it inflates. If your vehicle has air bags, never secure a child restraint in the center front seat. It's always better to secure a child restraint in the rear seat if your vehicle has one. You may secure a forward-facing child restraint in the right front passenger static seat, but before you do, always move the front passenger seat as far back as it will go. It's better to secure the child restraint in a rear seat.

See the earlier part about the top strap if the child restraint has one.

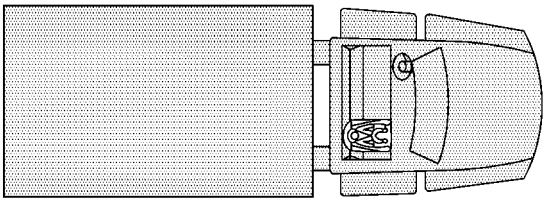


1. Make the belt as long as possible by tilting the latch plate and pulling it along the belt.
2. Put the restraint on the seat.
3. Run the vehicle's safety belt through or around the restraint. The child restraint instructions will show you how.
4. Buckle the belt. Make sure the release button is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.

5. To tighten the belt, pull its free end while you push down on the child restraint. If you're using a forward-facing child restraint, you may find it helpful to use your knee to push down on the child restraint as you tighten the belt.
6. Push and pull the child restraint in different directions to be sure it is secure.

To remove the child restraint, just unbuckle the vehicle's safety belt. It will be ready to work for an adult or larger child passenger.

Securing a Child Restraint in the Right Front Seat Position



Although a rear seat is a safer place, you can secure a forward-facing child restraint in the right front seat, if it is not an air suspension seat. Do not use a child restraint with an air suspension seat.

If your vehicle has a right front passenger air bag, there's a switch on the instrument panel that you can use to turn off the right front passenger's air bag when you want to secure a rear-facing child restraint at the right front passenger's position. See "Air Bag Off Switch" in the Index for more on this, including important safety information.

United States

Canada

⚠ CAUTION:

A child in a rear-facing child restraint can be seriously injured or killed if the right front passenger's air bag inflates. This is because the back of the rear-facing child restraint would be very close to the inflating air bag. Be sure to turn off the air bag before using a rear-facing child restraint in the right front seat position. If a forward-facing child restraint is suitable for your child, always move the passenger seat as far back as it will go.

⚠ CAUTION:

If the air bag readiness light ever comes on when you have turned off the air bag, it means that something may be wrong with the air bag system. The right front passenger's air bag could inflate even though the switch is off. If this ever happens, don't let anyone whom the national government has identified as a member of a passenger air bag risk group sit in the right front passenger's position (for example, don't secure a rear-facing child restraint in the right front passenger's seat) until you have your vehicle serviced. See "Air Bag Off Switch" in the Index for more on this, including important safety information.

You'll be using the lap-shoulder belt. See the earlier part about the top strap if the child restraint has one. Be sure to follow the instructions that came with the child restraint. Secure the child in the child restraint when and as the instructions say.

1. If your vehicle has a right front passenger's air bag and you are using a rear-facing child restraint in this seat, make sure the air bag is turned off. See "Air Bag Off Switch" in the Index. If your vehicle has a right front passenger's air bag and your child restraint is forward-facing, always move the seat as far back as it will go before securing it in this seat. See "Seats" in the Index.
2. Put the restraint on the seat.
3. Pick up the latch plate, and run the lap and shoulder portions of the vehicle's safety belt through or around the restraint. The child restraint instructions will show you how.

   If the shoulder belt goes in front of the child's face or neck, put it behind the child restraint.

4. Buckle the belt. Make sure the release button is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.

5. Pull the rest of the shoulder belt all the way out of the retractor to set the lock.

6. To tighten the belt, feed the shoulder belt back into the retractor while you push down on the child restraint. If you're using a forward-facing child restraint, you may find it helpful to use your knee to push down on the child restraint as you tighten the belt.

7. Push and pull the child restraint in different directions to be sure it is secure.

To remove the child restraint, just unbuckle the vehicle's safety belt and let it go back all the way. The safety belt will move freely again and be ready to work for an adult or larger child passenger.

If you were using a rear-facing child restraint in a vehicle equipped with a right front passenger's air bag, turn on the right front passenger's air bag when you remove the rear-facing child restraint from the vehicle unless the person who will be sitting there is a member of a passenger air bag risk group. See "Air Bag Off Switch" in the Index.

⚠ CAUTION:

If the right front passenger's air bag is turned off for a person who isn't in a risk group identified by the national government, that person won't have the extra protection of an air bag. In a crash, the air bag wouldn't be able to inflate and help protect the person sitting there. Don't turn off the passenger's air bag unless the person sitting there is in a risk group. See "Air Bag Off Switch" in the Index for more on this, including important safety information.

Older Children

Older children who have outgrown booster seats should wear the vehicle's safety belts.

If you have the choice, a child should sit next to a window so the child can wear a lap-shoulder belt and get the additional restraint a shoulder belt can provide.

Q: **What is the proper way to wear safety belts?**

A: If possible, an older child should wear a lap-shoulder belt and get the additional restraint a shoulder belt can provide. The shoulder belt should not cross the face or neck. The lap belt should fit snugly below the hips, just touching the top of the thighs. It should never be worn over the abdomen, which could cause severe or even fatal internal injuries in a crash.

Accident statistics show that children are safer if they are restrained in the rear seat.

In a crash, children who are not buckled up can strike other people who are buckled up, or can be thrown out of the vehicle. Older children need to use safety belts properly.

⚠ CAUTION:

Never do this.

Here two children are wearing the same belt. The belt can't properly spread the impact forces. In a crash, the two children can be crushed together and seriously injured. A belt must be used by only one person at a time.

Q: **What if a child is wearing a lap-shoulder belt, but the child is so small that the shoulder belt is very close to the child's face or neck?**

A: Move the child toward the center of the vehicle, but be sure that the shoulder belt still is on the child's shoulder, so that in a crash the child's upper body would have the restraint that belts provide. If the child is so small that the shoulder belt is still very close to the child's face or neck, you might want to place the child in a seat that has a lap belt, if your vehicle has one.

⚠ CAUTION:

Never do this.

Here a child is sitting in a seat that has a lap-shoulder belt, but the shoulder part is behind the child. If the child wears the belt in this way, in a crash the child might slide under the belt. The belt's force would then be applied right on the child's abdomen. That could cause serious or fatal injuries.

Wherever the child sits, the lap portion of the belt should be worn low and snug on the hips, just touching the child's thighs. This applies belt force to the child's pelvic bones in a crash.

Safety Belt Extender

If the vehicle's safety belt will fasten around you, you should use it.

But if a safety belt isn't long enough to fasten, your dealer will order you an extender. It's free. When you go in to order it, take the heaviest coat you will wear, so the extender will be long enough for you. The extender will be just for you, and just for the seat in your vehicle that you choose. Don't let someone else use it, and use it only for the seat it is made to fit. To wear it, just attach it to the regular safety belt.

Checking Your Restraint Systems

Now and then, make sure the safety belt reminder light and all your belts, buckles, latch plates, retractors and anchorages are working properly. Look for any other loose or damaged safety belt system parts. If you see anything that might keep a safety belt system from doing its job, have it repaired.

Torn or frayed safety belts may not protect you in a crash. They can rip apart under impact forces. If a belt is torn or frayed, get a new one right away.

Also look for any opened or broken air bag covers, and have them repaired or replaced. (The air bag system does not need regular maintenance.)

Replacing Restraint System Parts After a Crash

⚠ CAUTION:

A crash can damage the restraint systems in your vehicle. A damaged restraint system may not properly protect the person using it, resulting in serious injury or even death in a crash. To help make sure your restraint systems are working properly after a crash, have them inspected and any necessary replacements made as soon as possible.

If you've had a crash, do you need new belts?

After a very minor collision, nothing may be necessary. But if the belts were stretched, as they would be if worn during a more severe crash, then you need new parts.

If belts are cut or damaged, replace them. Collision damage also may mean you will need to have safety belt or seat parts repaired or replaced. New parts and repairs may be necessary even if the belt wasn't being used at the time of the collision.

If an air bag inflates, you'll need to replace air bag system parts. See the part on the air bag system earlier in this section.

Section 2 Features and Controls

Here you can learn about the many standard and optional features on your vehicle, and information on starting, shifting and braking. Also explained are the instrument panel and the warning systems that tell you if everything is working properly -- and what to do if you have a problem.

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2-5 Keys
2-7 Door Locks
2-8 Keyless Entry System (If Equipped)
2-12 Switchbanks
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Windows

⚠ CAUTION:

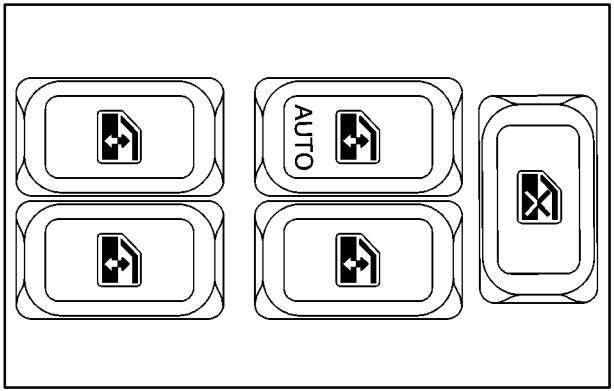
Leaving children in a vehicle with the windows closed is dangerous. A child can be overcome by the extreme heat and can suffer permanent injuries or even death from heat stroke. Never leave a child alone in a vehicle, especially with the windows closed in warm or hot weather.

Manual Windows

Turn the hand crank on each door to raise or lower the window.

Power Windows (If Equipped)

If your vehicle is equipped with power windows, the switches are located on each of the side doors. The driver's door also has a switch for the passenger's window.



If your vehicle is a Crew Cab model with power windows, there will be switches located on the rear doors as well.

However, the driver's door will have four switches located on it that can control all windows.

Your power windows will work when the ignition has been turned to ACCESSORY or RUN.

Press the rear of the switch with the power window symbol on it to lower the window and the front of the switch to raise the window.

Express-Down Feature

The driver's window also has an express-down feature that allows the window to be lowered without holding down the switch. Press and hold the rear of the window switch labeled AUTO for one second to activate the express-down mode.

The express-down mode can be cancelled at any time by pressing the front of the switch. To open the window part way, lightly tap the switch until the window is at the desired position.

Lockout Feature (If Equipped)

If you have a Crew Cab model with power windows, the driver's door will have a lockout feature. When engaged, this feature will prevent all window switches, except the driver's window switches, from operating. This switch is located above the four window switches on the driver's door.. When the switch is not engaged, all windows will return to normal operation.

Sliding Rear Window (If Equipped)

To open the sliding rear window, unlock the latch lever by pulling the lever toward the driver's side of the vehicle.

To close the window, slide the window toward the passenger's side of the vehicle. The latch lever will automatically snap onto the latch plate. Try to open the window without releasing the latch lever to be sure the window is in the locked position.

Keys

⚠ CAUTION:

Leaving children in a vehicle with the ignition key is dangerous for many reasons. A child or others could be badly injured or even killed.

They could operate the power windows or other controls or even make the vehicle move. Don't leave the keys in a vehicle with children.

Your vehicle has one double-sided key for the ignition and all door locks.

If you ever lose your key, your dealer will be able to assist you with obtaining a new one.

NOTICE:

Your vehicle has a number of new features that can help prevent theft. But you can have a lot of trouble getting into your vehicle if you ever lock your keys inside. You may even have to damage your vehicle to get in. So be sure you have extra keys.

If you ever do get locked out of your vehicle, call GM Roadside Assistance Center. See “Roadside Assistance” in the Index.

Door Locks

⚠ CAUTION:

Unlocked doors can be dangerous.

- **Passengers -- especially children -- can easily open the doors and fall out of a moving vehicle. When a door is locked, the handle won't open it. You increase the chance of being thrown out of the vehicle in a crash if the doors aren't locked. So, wear safety belts properly and lock the doors whenever you drive.**
- **Young children who get into unlocked vehicles may be unable to get out. A child can be overcome by extreme heat and can suffer permanent injuries or even death from heat stroke. Always lock your vehicle whenever you leave it.**
- **Outsiders can easily enter through an unlocked door when you slow down or stop your vehicle. Locking your doors can help prevent this from happening.**

There are several ways to lock and unlock your vehicle.

If your vehicle is equipped with keyless entry, you can use your transmitter to lock or unlock your vehicle. See "Keyless Entry System" later in this section for more information.

To lock or unlock your door from the outside, use your key.

To lock your door from the inside, slide the manual lever on your door down. To unlock the door, slide the manual lever up.

Power Door Locks (If Equipped)

If your vehicle has power door locks, press the bottom side of the power door lock switch to lock all the doors at once. To unlock all the doors at once, press the top side of the power door lock switch.

When a door is locked, the inside door handle will not work.

Keyless Entry System (If Equipped)

If your vehicle has this feature, you can lock and unlock your doors from about 3 feet (1 m) up to 30 feet (9 m) away using the remote keyless entry transmitter supplied with your vehicle.

Your keyless entry system operates on a radio frequency subject to Federal Communications Commission (FCC) Rules and with Industry Canada.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This device complies with RSS-210 of Industry Canada. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference received, including interference that may cause undesired operation of the device.

Changes or modifications to this system by other than an authorized service facility could void authorization to use this equipment.

At times you may notice a decrease in range. This is normal for any remote keyless entry system. If the transmitter does not work or if you have to stand closer to your vehicle for the transmitter to work, try this:

- Check the distance. You may be too far from your vehicle. You may need to stand closer during rainy or snowy weather.
- Check the location. Other vehicles or objects may be blocking the signal. Take a few steps to the left or right, hold the transmitter higher, and try again.
- Check to determine if battery replacement is necessary. See the instructions that follow.
- If you're still having trouble, see your dealer or a qualified technician for service.

Operation

To unlock the driver's door, press the UNLOCK button one time. If you press the button again within five seconds, all of the doors will unlock. When the UNLOCK button is pressed, the interior dome lamps are turned on for about 40 seconds or until the ignition switch is activated. Press the LOCK button to lock all doors.

Matching Transmitter(s) to Your Vehicle

Each remote keyless entry transmitter is coded to prevent another transmitter from unlocking your vehicle. If a transmitter is lost or stolen, a replacement can be purchased through your dealer. Remember to bring any remaining transmitters with you when you go to your dealer. When the dealer matches the replacement transmitter to your vehicle, any remaining transmitters must also be matched. Once your dealer has coded the new transmitter, the lost transmitter will not unlock your vehicle. Each vehicle can have a maximum of four transmitters matched to it.

Battery Replacement

Under normal use, the battery in your remote keyless entry transmitter should last about two years.

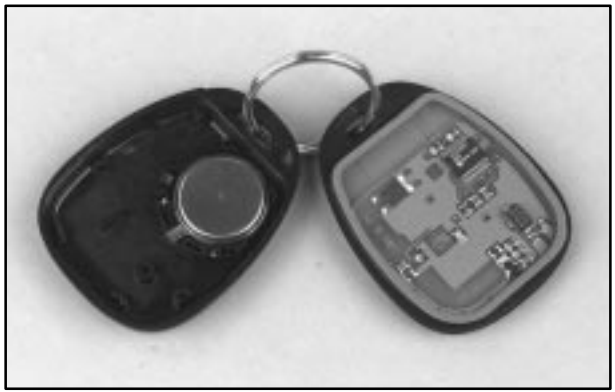
You can tell the battery is weak if the transmitter won't work at the normal range in any location. If you have to get close to your vehicle before the transmitter works, it's probably time to change the battery.

NOTICE:

When replacing the battery, use care not to touch any of the circuitry. Static from your body transferred to these surfaces may damage the transmitter.

1. Insert a thin object, such as a coin, into the slot between the covers of the transmitter housing near the key ring hole. Remove the bottom by twisting the object.

2. Remove and replace the battery, positive (+) side down. Use one Panasonic® type CR2032 battery:



3. Align the covers and snap them together.
4. Check the operation of the transmitter. If the transmitter does not work after battery replacement, it may need to be resynchronized to your vehicle. See “Resynchronization” following.

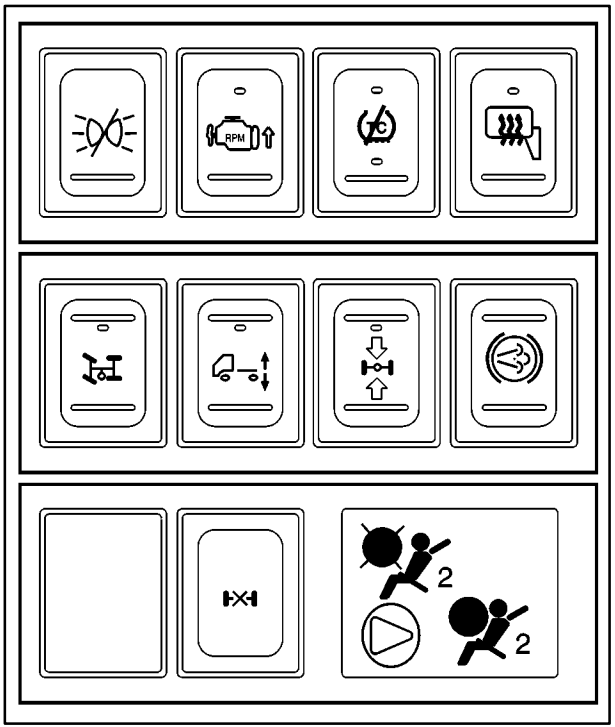
Resynchronization

Resynchronization may be necessary due to the security method used by this system. The transmitter does not send the same signal twice to the receiver. The receiver will not respond to a signal it has been sent previously. This prevents anyone from recording and playing back the signal from the transmitter.

To resynchronize your transmitter, stand close to your vehicle and simultaneously press and hold the LOCK and UNLOCK buttons on the transmitter for at least five seconds. The door locks should cycle to confirm resynchronization. If the locks do not cycle, see your dealer for service.

Switchbanks

Instrument Panel Switchbank



This switchbank is located in the center of the instrument panel.

The switchbank may include marker lamp defeat, high idle, traction control, heated mirrors, power take-off, rear air suspension, two-speed axle (electric), exhaust brake, two-speed axle (air), differential lock, rear axle differential lock and inter-axle differential lock. If your vehicle does not have some of the features controlled by these switches, there will be a blank switch marker in its place.

For more information, see each of these features in the Index.

Theft

Vehicle theft is big business, especially in some cities, and even commercial vehicles are no exception. Although your vehicle has a number of theft-deterrent features, we know that nothing we put on it can make it impossible to steal. However, there are ways you can help.

Key in the Ignition

If you leave your vehicle with the keys inside, it's an easy target for joy riders or professional thieves -- so don't do it.

Remember to remove your key and take it with you. Always do this. When you take your key with you, your ignition will be locked. Also remember to lock the doors.

New Vehicle “Break-In”

NOTICE:

Your vehicle doesn’t need an elaborate “break-in.” But it will perform better in the long run if you follow these guidelines:

- **Let your engine warm up before you operate your vehicle under load.**
- **Keep your speed at 55 mph (88 km/h) or less for the first 500 miles (805 km).**
- **Don’t drive at any one speed -- fast or slow -- for the first 500 miles (805 km). Don’t make full-throttle starts.**

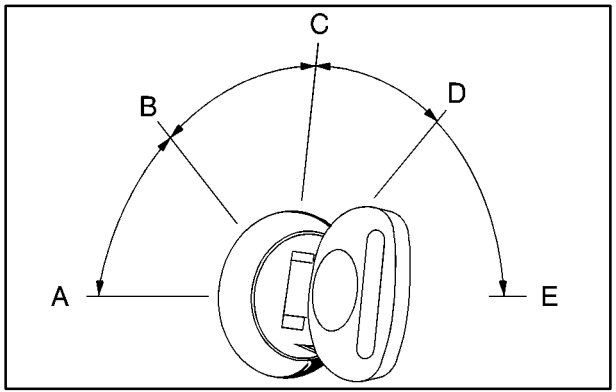
NOTICE: (Continued)

NOTICE: (Continued)

- **Avoid making hard stops for the first 200 miles (322 km) or so. During this time your new brake linings aren’t yet broken in. Hard stops with new linings can mean premature wear and earlier replacement. Follow this breaking-in guideline every time you get new brake linings.**
- **Use the lowest gear you can when you start a loaded vehicle in motion and when going up hills to avoid overloading the engine.**
- **Check and adjust engine and transmission fluid levels often and be sure tires are properly inflated for the load you’re carrying.**
- **If you have a Caterpillar® diesel engine, see the Caterpillar® Diesel Engine Operation & Maintenance Manual.**

Ignition Positions

With your key in the ignition switch, you can turn it to five different positions.



A (ACCESSORY): This position allows you to use things like the radio, power windows and the windshield wipers when the engine is off. To get into ACCESSORY, push in the key and turn it toward you. Your steering wheel will remain locked, just as it was before you inserted the key.

B (LOCK): This position locks your ignition, steering wheel and transmission. It's a theft-deterrent feature. You will only be able to remove your key when the ignition is turned to LOCK.

C (OFF): This position lets you turn off the engine but still turn the steering wheel. It doesn't lock the steering wheel like LOCK. Use OFF if you must have your vehicle in motion while the engine is off (for example, if your vehicle is being pushed).

D (RUN): This is the position for driving.

E (START): This position starts your engine.

Engine Starter Over-Crank Protection (If Equipped)

Your vehicle may have an engine starter over-crank protection system. If the starter motor overheats and shuts off due to over-cranking, the motor must cool down before it will reset and allow starter operation. It can take up to six minutes before the starter will work again.

Starting Your Gasoline Engine

Engines start differently. The 8th digit of your Vehicle Identification Number (VIN) shows the code letter for your engine. See “Vehicle Identification Number” in the Index. Follow the proper steps to start the engine.

To start a diesel engine, see “Starting Your Diesel Engine” in the Index.

Automatic Transmission

Set the parking brake and move your shift lever to NEUTRAL (N) or PARK (P) if so equipped. Your engine won’t start in any other position -- that’s a safety feature.

Manual Transmission

Set the parking brake, shift to neutral and hold the clutch pedal to the floor while starting the engine.

Starter Motor Operation

- The starter motor will disengage if you release the key or the engine reaches a predetermined engine speed.
- To prevent overheating, the starter motor will disengage after continuously operating for 15 seconds. You must release the key from the start position to re-engage the starter.
- The starter motor will not engage if the engine is already running.
- The starter motor will disengage if, after two seconds, the starter pinion gear does not engage the flywheel or there is no engine rpm signal from the engine speed sensor.

Starting Your Engine

1. Without pushing the accelerator pedal, turn your ignition key to START. When the engine starts, let go of the key. The idle speed will go down as your engine gets warm.
2. If the engine doesn't start in 10 seconds, push the accelerator pedal all the way down and crank the engine for five more seconds, unless it starts sooner.
3. If your engine still won't start (or starts but then stops), it could be flooded with too much gasoline.

   Wait 15 seconds to let the starter motor cool down. Do Steps 1 through 3 again.

   When the engine starts, let go of the key and the accelerator pedal.

NOTICE:

Your engine is designed to work with the electronics in your vehicle. If you add electrical parts or accessories, you could change the way the engine operates. Before adding electrical equipment, check with your dealer. If you don't, your engine might not perform properly.

NOTICE:

If you ever need to have your vehicle towed, see the part of this manual that tells how to do it without damaging your vehicle. See "Towing Your Vehicle" in the Index.

Gasoline Engine Warm-Up

When you've started your engine, let it run for 20 or 30 seconds to warm up before you put a load on the engine.

Drive at moderate speeds for the first few miles, especially in cold weather. Running a cold engine at high speed can damage it. See "Engine High Idle System" in the Index if your vehicle has this feature.

Restarting the Gasoline Engine While Moving (Automatic Transmission)

If you have to restart the engine while the vehicle is moving, you'll first have to shift the automatic transmission to NEUTRAL (N). This safety feature prevents starting the engine when the transmission is in a drive gear.

Stopping the Gasoline Engine

Let your engine idle for a few seconds before turning it off after you have finished driving your vehicle.

If you shift to NEUTRAL (N) or PARK (P), set the parking brake.

If your vehicle has a two-speed axle, put the range selector in LOW. To be sure the axle has shifted into LOW, engage the clutch and transmission; the vehicle may move slightly when you do this.

While your engine is idling before you turn it off, you can make a list of any operational or handling concerns to give to responsible maintenance personnel so they can handle them right away.

Moisture will condense in a fuel tank that is almost empty if the engine has not run for a while, even just overnight under some conditions. So, it's always best to refuel your vehicle at the end of each run.

Starting the Diesel Engine

If you have a Caterpillar diesel engine, also refer to your Caterpillar® Diesel Engine Operation & Maintenance Manual for starting procedure.

For vehicles with the DURAMAX™ diesel engine, also see "Starting Your DURAMAX™ Diesel Engine" following.

To make starting easier in cold weather (below 32°F or 0°C), the proper viscosity engine oil should be used. See "Engine Oil" in the Index. It's also best to heat the engine oil first. You can do this by using an engine coolant heater.

NOTICE:

If you ever need to have your vehicle towed, see the part of this manual that tells how to do it without damaging your vehicle. See "Towing Your Vehicle" in the Index.

Restarting the Diesel Engine While Moving (Automatic Transmission)

If you have to restart the engine while the vehicle is moving, you'll first have to shift the automatic transmission to NEUTRAL (N). This safety feature prevents starting the engine when the transmission is in a drive gear.

Stopping the Diesel Engine

If you have a Caterpillar diesel engine, see your Caterpillar® Diesel Engine Operation & Maintenance Manual.

1. Set the parking brake and shift to NEUTRAL (N) or PARK (P).
2. Turn the ignition key to OFF.

   If your vehicle has a two-speed axle, see "Rear Axle, Two-Speed Electric Shift Control" or "Rear Axle, Two-Speed Airshift Control" in the Index.

Cold Weather Starting (Caterpillar® Diesel)

Because the diesel engine uses compression ignition, it is harder to start in cold weather than a gasoline engine. The air intake heater and use of the proper engine oil, optional engine coolant heaters and optional ether injection systems help cold weather starting. See the Caterpillar® Diesel Engine Operation & Maintenance Manual for more information.

NOTICE:

Your diesel engine has an electric air intake heater system which reduces white smoke and helps start the engine in cold weather. Do not spray starting fluid into the air intake where it can contact the heater elements.

If you don't have the GM Automatic Ether Injection System, don't use starting fluid or you could damage your engine. If you have the GM system, use only GM approved starting fluid that has been tested to establish compatibility with the air inlet heater system.

Diesel Engine Warm-Up

Several factors affect how quickly your diesel engine warms up. These can include outside temperature, engine load, idle time and your vehicle's option content. Your vehicle may be equipped with some features that can help the engine reach operating temperature sooner. Some of these features are discussed below.

Also, remember that an automatic transmission adds heat to the cooling system through the heat exchanger in the radiator. Because of this, vehicles equipped with automatic transmissions are often able to retain engine coolant heat better than manual transmission vehicles.

See your Caterpillar® Operation & Maintenance manual for additional diesel engine warm-up information.

Engine Alarm and Automatic Shutdown (If Equipped)

Your check gages light will come on if the system senses high engine temperature or low engine oil pressure. If high engine temperature or low engine oil pressure is detected, you will also hear a tone alarm at two beats per second. The alarm and the light will remain on until the condition is fixed. If the engine temperature or oil pressure condition worsens, the tone alarm will go to five beats per second.

If the system senses low engine coolant, the five beat per second alarm and the low coolant warning light will come on.

The five beats per second tone alarm means that your engine will shut down in approximately 25-30 seconds. There is also an engine shutdown light to indicate that the engine will shut down. See "Automatic Engine Shutdown Light" later in this section.

Pull off the road and shut off the engine. Don't start it until the reason for the problem is known, and the problem is fixed. If the engine shuts down when you are still in traffic, you can restart the engine and get another 25-30 seconds of operation. Do this only if you have to, since there is a problem that can harm the engine if it isn't fixed. Engine automatic shutdown, for gasoline engines, requires activation by your dealer.

High Idle System (Caterpillar® Diesel and Gasoline Engines)

Your vehicle has both automatic and manual high idle capabilities.

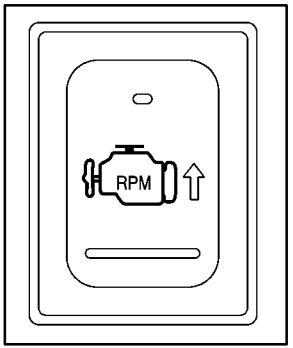
Automatic High Idle System (Diesel Engines) (If Equipped)

The automatic high idle feature will engage whenever you start your vehicle and the engine is below the preset operating temperature. This will help decrease engine warm-up time.

Idle speed will then return to normal under any of the following conditions:

- The engine reaches the preset operating temperature or has been operating for at least ten minutes.
- The brake pedal is pressed.
- The manual transmission clutch pedal is pressed or, the automatic transmission (if equipped) is shifted from NEUTRAL (N) or PARK (P).
- The vehicle speed exceeds approximately 5 mph (8 km/h).
- The throttle is pressed.

Manual High Idle System (If Equipped)



If your vehicle has this feature, the manual high idle switch is located in the instrument panel switchbank.

This system can be used to increase your engine idle speed whenever the following conditions are met:

- The brake pedal is not pressed.
- The vehicle speed is below approximately 5 mph (8 km/h) for vehicles with diesel engines. The vehicle must not be moving and the accelerator must not be pressed for vehicles with gasoline engines.
- The manual transmission (if equipped) clutch pedal is not pressed or, the automatic transmission (if equipped) is in NEUTRAL (N) or PARK (P).

The manual high idle feature is activated by pressing the switch on the instrument panel. When the switch is pressed again, or any of the previous conditions are not met, manual high idle will be deactivated.

The manual high idle has been preset at the factory. Your dealer may change the setting to fit your needs.

For vehicles with Caterpillar diesel engines, manual high idle can be used to set any desired high idle speed.

To set a new temporary engine idle speed:

1. Make sure all of the previously described conditions are met.
2. Press the accelerator pedal to the desired engine speed.
3. Momentarily press the manual high idle switch.

The temporary high idle speed will be set. This new high idle rpm level will be remembered by the system until either the ignition is turned to OFF or a new high idle speed is set.

Exhaust Restrictor (Diesel Engines) (If Equipped)

If your vehicle is equipped with this feature, there is an exhaust restrictor valve located in the exhaust stream. The valve closes to provide back pressure to the engine for the purpose of warming the engine quickly.

The exhaust restrictor operates:

- while the engine is running.
- while the vehicle is not moving.
- while the accelerator, brake and clutch pedals are not pressed.
- while idling or driving in cold temperatures.
- when the shift lever is in NEUTRAL (N) or PARK (P).

On vehicles equipped with a diesel engine exhaust brake, the exhaust brake switch must be on. The indicator in the exhaust brake switch will be lit when the exhaust restrictor is active. The exhaust brake indicator light in the center of the instrument panel will also be lit whenever the exhaust restrictor is active.

When the engine coolant temperature is below 149°F (65°C) and the outside temperature is below 50°F (10°C), the exhaust restrictor will come on within 45 seconds of starting the engine. After running the engine for an additional 45 seconds, the engine idle will increase.

The exhaust restrictor will shut off and engine idle will return to normal once the engine is warmed up, or the transmission is shifted into range.

Starting Your DURAMAX™ Diesel Engine

Your diesel engine starts differently than a gasoline engine.

Automatic Transmission

Move your shift lever to PARK (P) or NEUTRAL (N). Your engine won't start in any other position -- that's a safety feature. To restart when you're already moving, use NEUTRAL (N) only.

NOTICE:

Don't try to shift to PARK (P) if your vehicle is moving. If you do, you could damage the transmission. Shift to PARK (P) only when your vehicle is stopped.

Manual Transmission

Move your shift lever to neutral and hold the clutch pedal to the floor while starting the engine. Your vehicle won't start if the clutch pedal is not all the way down -- that's a safety feature.

Starting Your Engine

1. Turn your ignition key to RUN.

   Observe the wait to start light. See "Wait To Start Light" in the Index. (This light may not come on if the engine is hot.)

2. As soon as the wait to start light goes off, IMMEDIATELY turn the ignition key to START. When the engine starts, let go of the key.

NOTICE:

Holding your key in START for longer than 15 seconds at a time will cause your battery to be drained much sooner. And the excessive heat can damage your starter motor.

NOTICE:

If the wait to start light stays on, it means that your vehicle could have one of several problems, so you should have it serviced right away.

3. If the engine does not start after 15 seconds of cranking, turn the ignition key to OFF. Wait one minute for the starter to cool, then try the same steps again.

If you're trying to start your engine after you've run out of fuel, follow the steps in "Running Out of Fuel." See "Diesel Fuel Requirements and Fuel System" in the Index.

When your engine is cold, let it run for a few minutes before you move your vehicle. This lets oil pressure build up. Your engine will sound louder when it's cold.

NOTICE:

If you're not in an idling vehicle and the engine overheats, you wouldn't be there to see the overheated engine condition. This could damage your vehicle. Don't let your engine run when you're not in your vehicle.

Cold Weather Starting (Diesel Engine)

The following tips will help you get good starting in cold weather.

Use the recommended engine oil when the outside temperature drops below freezing. See "Engine Oil" in the Index. When the outside temperature drops below 0°F (-18°C), use of the engine coolant heater is recommended.

If you experience longer cranking times, notice an unusual amount of exhaust smoke or are at higher altitudes (over 7,000 ft. or 2 135 m), you may use your engine coolant heater. See "Engine Coolant Heater" in the Index.

See "Diesel Fuel Requirements and Fuel System" in the Index for information on what fuel to use in cold weather.

If Your Diesel Engine Won't Start

If you've run out of fuel, look at "Running Out of Fuel." See "Diesel Fuel Requirements and Fuel System" in the Index.

If you're not out of fuel, and your engine won't start, do this:

Turn your ignition key to RUN. IMMEDIATELY after the wait to start light goes off, turn the ignition key to START.

If the light doesn't go off, wait a few seconds, then try starting your engine again. And, see your dealer as soon as you can for a starting system check.

If the light comes on and then goes off and you know your batteries are charged, but your engine still won't start, your vehicle needs service.

If the light does not come on when the engine is cold, your vehicle needs service.

If your batteries don't have enough charge to start your engine, see "Battery" in the owner's manual.

Be sure you have the right oil for your engine, and that you've changed the oil at the proper times. If you use the wrong oil, your engine may be harder to start.

Be sure you are using the proper fuel for existing weather conditions. See "Diesel Fuel Requirements and Fuel System" in the Index.

If the engine starts, runs a short time, then stops, your vehicle needs service.

⚠ CAUTION:

Do not use gasoline or starting "aids," such as ether, in the air intake. They could damage your engine. There could also be a fire, which could cause serious personal injury.

Engine Checks Before Operating

When you've started your engine, let it run for 20 to 30 seconds before you put a load on the engine. But *don't* leave the vehicle while the engine is running.

Avoid unnecessary idling of diesel engine equipped vehicles.

If the engine idles too long, the temperature of the engine coolant will fall below the normal operating range. Low engine operating temperature causes several conditions which affect engine operation and reduce engine life.

The engine should be permitted to go through a warm-up period. Operate the vehicle at a minimum of 600 rpm during the warm-up period. During this period and during operation, the following observations should be made.

During this warm-up period, check your warning lights and gages:

- If oil pressure doesn't begin to rise within 15 seconds of starting, stop the engine and find the cause.
- If the engine coolant temperature gage needle goes into the hot area on the gage, stop the engine and find the cause of the overheating.
- If you have air brakes, the dual-needle air pressure gage should read at least 115 psi (790 kPa) for both service systems before you try to move the vehicle. When air pressure is below 60 psi (420 kPa), the LOW AIR light will come on and you will hear a tone alarm. If the pressure doesn't build up or drops during warm-up, stop the engine and find the cause before you try to move the vehicle. Recommended air pressure before actually driving away is 120 psi (830 kPa).
- The charging system light should come on when the ignition key is turned to RUN or START and should go out when the engine is running above idle. If the light doesn't go out or comes back on during normal engine operation, have the charging system checked right away. (This light tells you if the generator is not charging; it doesn't reflect the condition of the battery.)

- The voltmeter charge indicator gage tells you the condition of your battery's charge. The gage should be in the center area during engine operation. The red area on the left indicates an undercharge condition; the red area on the right indicates an overcharge. If the gage is in either red area, have the battery and charging system checked right away.

NOTICE:

For diesel engines, don't allow the engine to operate at low idle for more than five minutes. This can cause low engine operating temperatures which can affect engine operation and reduce engine life. Engine idle speed should be increased to 1200 rpm whenever extended idle is required. Once started, the engine should be placed under load to allow the engine coolant temperature to reach 150°F (66°C) before shutting off the engine.

Engine Coolant Heater (If Equipped)

If your vehicle is equipped with this feature, the plug-in receptacle is located under the driver's door.

In very cold weather, 0°F (-18°C) or colder, the engine coolant heater can help. You'll get easier starting and better fuel economy during engine warm-up. Usually, the coolant heater should be plugged in a minimum of four hours prior to starting your vehicle.

To Use the Engine Coolant Heater

1. Turn off the engine.
2. Find the plug-in receptacle (either behind the front bumper or in the component box).
3. Plug a heavy-duty, three-prong extension cord (rated for at least 15 amps) into the vehicle's plug-in receptacle first. Then plug the extension cord into a normal, grounded 110-volt AC outlet.

⚠ CAUTION:

Plugging the cord into an ungrounded outlet could cause an electrical shock. Also, the wrong kind of extension cord could overheat and cause a fire. You could be seriously injured. Plug the cord into a properly grounded three-prong 110-volt AC outlet. Use a heavy-duty three-prong extension cord rated for at least 15 amps.

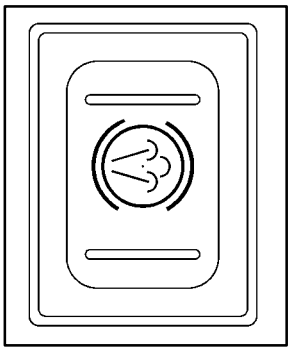
4. Before starting the engine, be sure to unplug the cord.

How long should you keep the coolant heater plugged in? The answer depends on the outside temperature. From 32°F to -10°F (0°C to -23°C), keep the coolant heater plugged in at least two hours. Below -10°F (-23°C), keep the coolant heater plugged in for a minimum of eight hours or overnight. It will not harm either the coolant heater or the vehicle to leave the coolant heater plugged in longer than the times stated. Be sure to remove and store the cord before starting the engine. See "Diesel Fuel Requirements and Fuel System" in the Index for information on what fuel to use in cold weather.

Diesel Engine Exhaust Brake (If Equipped)

The exhaust brake is available on vehicles equipped with a diesel engine. It is located in the exhaust system.

The exhaust brake is used to help slow the vehicle and may assist the vehicle's foundation brakes. The use of the exhaust brake will assist the braking of the vehicle and prolong the life of the foundation brake lining material.



The exhaust brake switch is located in the instrument panel switchbank.

Push the bottom of the switch to turn the exhaust brake on. When you push the top of the switch, the exhaust brake will turn off.

There is an indicator light on the instrument panel similar to the symbol on the switch, that will come on when the exhaust brake is active. See "Exhaust Brake Indicator Light" in the Index for more information.

When using the exhaust brake, the proper gear range selection is important. The exhaust brake will be most effective if the gear range selected is the lowest possible range that does not allow the engine rpm to go more than 200 rpm above rated (full load) rpm. If you have a Caterpillar diesel engine, do not exceed 2900 rpm. If you have a DURAMAX (LG4) diesel engine, do not exceed 3200 rpm. If you have a DURAMAX (LB7) diesel engine, do not exceed 3600 rpm.

If you have an automatic transmission and press this button, the transmission will downshift to a factory default setting of fourth gear. To change the default setting, or for more information on factory default settings, contact your dealer for assistance.

The accelerator and clutch pedals must be released in order for the exhaust brake to engage. The exhaust brake will not function when the cruise control feature is active, and will automatically shut off when the anti-lock brake system is active.

⚠ CAUTION:

Be careful when using the exhaust brake or you could lock the wheels and lose control of the vehicle. Operators not familiar with an exhaust brake should not use this brake on slippery surfaces before learning to use it on dry surfaces. If the vehicle's wheels begin to lock when using the exhaust brake on slippery surfaces, switch the exhaust brake off immediately. The exhaust brake will turn off if the anti-lock brake system is activated.

Two-Speed Rear Axle Electric Shift Control (If Equipped)

If your vehicle is equipped with this feature, you'll find a label on the headliner above the windshield or in another place near the driver that shows how to use it. Be sure to follow the directions carefully.

Use the following directions based on the type of shift control you have.

Manual Transmission

The rear axle shift control switch for a manual transmission is located on the shift lever.

When the switch is up, the rear axle is in the high range. Push the switch down to change to low range.

The two-speed axle should be in low when you park the vehicle. You'll need to engage the transmission, even move the vehicle a little, to be sure the axle is in the low range. Then apply the parking brake, shift into NEUTRAL and shut off the engine.

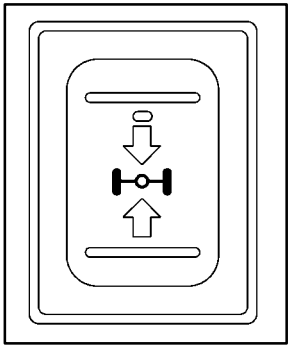
Also, always start the vehicle in motion with the two-speed axle in the low range. To shift up from low to high, do the following:

1. Move the switch up for the high range,
2. disengage the clutch, and
3. after a brief pause, engage the clutch and then press down on the accelerator.

To shift down from high to low, do the following:

1. Move the switch down to low,
2. release the accelerator and then quickly apply it again.

Automatic Transmission



The rear axle shift control switch for an automatic transmission is located in the instrument panel switchbank.

Press the bottom of the switch to get to the low range. The switch indicator light will come on when the vehicle is in low range. Press the top of the switch to return to the high range.

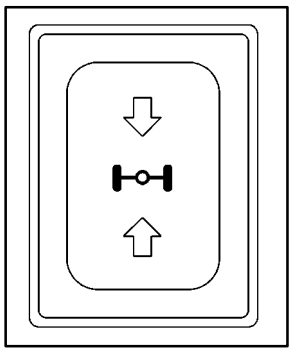
The two-speed axle should be in low range when you park the vehicle. Apply the parking brake, shift to PARK (P) or NEUTRAL (N) and shut off the engine.

To operate off-road or under a heavy load, shift into low range when the vehicle is standing still and then operate the transmission normally.

On the highway, with the axle in low range and the transmission in top gear, you may shift the axle to high range by raising the switch and releasing the accelerator momentarily. Reapply the accelerator after you shift.

Under light load conditions, first shift the axle into the high range with the vehicle at a standstill and then operate the transmission normally.

Air Shift Control (Automatic Transmission)



The switch for the rear axle shift control is located in the instrument panel switchbank.

Press the bottom of the switch to get to the low range. Press the top of the switch to return to the high range.

The two-speed axle should be in low when you park the vehicle.

You'll need to engage the transmission, even moving the vehicle a little, to be sure the axle is in low range. Then shift into PARK (P), apply the parking brake and shut off the engine.

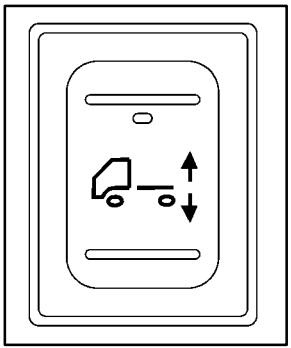
Also, always start the vehicle in motion with the two-speed axle in the low position. To shift up from low to high, press the top of the rear axle shift control switch and press down on the accelerator. When you shift the axle from high to low, press the bottom of the switch, release the accelerator and then quickly press it down again.

Air Suspension (If Equipped)

Your vehicle may be equipped with the Hendrickson HAS Series single-axle air suspension which is designed for single-axle on-highway use. The feature is available in 19,000 lb. (8 618.3 kg), 21,000 lb. (9 525.4 kg) and 23,000 lb. (10 432.6 kg) capacities for operations which require extra cubic capacity and a reduced deck height.

Rear Air Suspension Dump Control

If your vehicle is equipped with the Hendrickson HAS Series single-axle air suspension, you have this control. The air suspension dump control allows the operator to lower the deck height approximately 4.5 inches (11.5 cm) from the normal frame height.



The switch to deflate and inflate the air suspension is located in the instrument panel switchbank.

Press the bottom of the switch to deflate the air suspension and lower the deck height. Press the top of the switch to return the suspension to normal deck height.

An indicator light will come on and stay on whenever the switch is in the dumped position.

Automatic Transmission Operation

We build vehicles with five and six-speed automatic transmissions. This part of the manual covers the basics of these. With some of the transmissions, you will find another manual in your vehicle that goes into more detail. On the headliner, in front of and above the driver, or in some other place near the driver, you will see a label that describes important operating facts about the automatic transmission in your vehicle. Make sure you follow the instructions on this label.

Be sure to keep your parking brake set until you are ready to shift into DRIVE (D), and press the brake pedal while shifting from NEUTRAL (N) or PARK (P) to a drive gear.

All vehicles equipped with automatic transmissions can be started in PARK (P), if equipped, or in NEUTRAL (N). See the Allison® Transmission Operator's Manual in your vehicle for more information about this.

⚠ CAUTION:

It is dangerous to get out of your vehicle if the shift lever is not fully in PARK (P) with the parking brake firmly set. Your vehicle can roll.

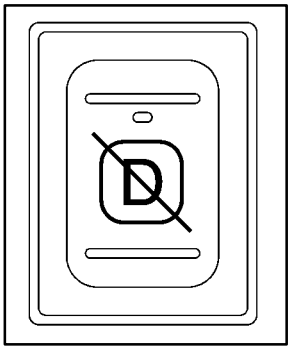
Don't leave your vehicle when the engine is running unless you have to. If you have left the engine running, the vehicle can move suddenly. You or others could be injured. To be sure your vehicle won't move, even when you're on fairly level ground, always set your parking brake and move the shift lever to PARK (P), if equipped.

⚠ CAUTION:

Shifting into a drive gear while your engine is "racing" (running at high speed) is dangerous. Unless your foot is firmly on the brake pedal, your vehicle could move very rapidly. You could lose control and hit people or objects. Don't shift into a drive gear while your engine is racing.

Overdrive Defeat (If Equipped)

If your vehicle has this feature, you can select not to shift up to fifth gear. This is useful when towing or under a heavy load.



The overdrive defeat switch is located in the instrument panel to the right of the steering column.

Press the switch to limit the transmission to fourth gear. This will allow for better fuel economy and fewer downshifts while pulling a tractor or trailer or under a heavy load. The indicator light in the switch will come on whenever overdrive defeat is active.

Manual Transmission Operation

Using the Clutch

When you're starting to move the vehicle, it's important to begin with the engine speed at idle. Then start to engage the clutch and listen for an engine speed drop of about 100 rpm. At this point, the clutch is engaging, so you should increase the engine speed and fully engage the clutch. It's important not to increase the engine speed sooner or before the clutch begins it's engagement. If you do, you can cause damage to your vehicle.

Double-Clutching

You must use the double-clutching method when you shift an unsynchronized gear set. Disengage the clutch, shift to neutral and engage the clutch. When upshifting, slow the engine until the engine rpm and road speed match. When downshifting, accelerate the engine until the engine rpm and road speed match. Then quickly disengage the clutch and move the shift lever to the next gear position and engage the clutch.

Eaton Fuller Five and Six-Speed Transmissions and TTC Spicer Seven-Speed Transmissions

These transmissions have gears that automatically synchronize when you shift up or down (except FIRST (1) gear on the five-speed and seven-speed transmission which is unsynchronized). Choose the gear that will maintain the road speed you want while keeping the engine above two-thirds of the governed speed. When the engine speed drops below two-thirds of the governed speed, shift into the next lower gear before your engine begins to lug. When you shift down, be sure to double-clutch if required.

ZF Six-Speed Transmission

Here's how to operate your transmission.

This six-speed pattern is unique to GM manual transmissions. The transmission always repositions the shift lever to neutral, which is located between FOURTH (4) and FIFTH (5) gear.

To prevent unintentional gear selections, additional force is required to move the shift lever into REVERSE (R) or FIRST (1). Use FIRST (1) when trailer towing, driving with payload in the pickup box or launching on a grade. Otherwise, start in SECOND (2) gear. Only shift into FIRST (1) when the vehicle has stopped moving.

During the first 500 miles (805 km) of vehicle use, start the vehicle moving in FIRST (1) gear. This allows the clutch components to wear-in properly.

FIRST (1): With the vehicle at a stop, release the brake, press the clutch pedal and shift into FIRST (1). Then, slowly let up on the clutch pedal as you press the accelerator pedal. Only downshift into FIRST (1) when the vehicle has come to a complete stop. If the shift lever will not go into FIRST (1), put the lever in neutral and let up on the clutch pedal to fully engage the clutch. Press the clutch pedal again. Then, shift into FIRST (1).

SECOND (2): With the vehicle at a stop, release the brake, press the clutch pedal and shift into SECOND (2). Then, slowly let up on the clutch pedal as you press the accelerator pedal. With the vehicle moving, press the clutch pedal and upshift into SECOND (2) from FIRST (1) while applying light pressure to the right on the shifter. Then, slowly let up on the clutch pedal as you press the accelerator pedal. If you come to a complete stop and the shift lever will not go into SECOND (2), put the lever in neutral and let up on the clutch pedal to fully engage the clutch. Press the clutch pedal again. Then, shift into SECOND (2).

THIRD (3): Press the clutch pedal and upshift into THIRD (3). Then, slowly let up on the clutch pedal as you press the accelerator pedal.

FOURTH (4), FIFTH (5) and SIXTH (6): Upshift into the higher forward gears the same way as you do THIRD (3). Slowly let up on the clutch pedal as you press the accelerator pedal.

NEUTRAL: Use this position when you start or idle your engine.

REVERSE (R): To back up, press the clutch pedal. Wait for the vehicle to stop moving and then, shift to REVERSE (R). Let up on the clutch slowly while pressing the accelerator pedal. Also, use REVERSE (R), along with the parking brake, when turning off your engine and parking your vehicle.

Eaton Fuller Nine and Ten-Speed Non-Synchronized Manual Transmissions (If Equipped)

If your vehicle has one of these unsynchronized transmissions, it's naturally somewhat complicated. The label above the windshield will tell you the operating basics you need to know.

The following are driving tips.

- Always choose an initial starting gear suitable for the load and terrain.
- Always use double-clutching procedures when shifting.
- Never move the range shift lever to the LO speed gear position after HI range preselection, or anytime the transmission is in the HI range.
- Never move the range knob or lever with the shift lever in NEUTRAL while the vehicle is moving.
- Never make a range shift while moving in REVERSE (R).

Clutch Brake (Vehicles with Non-Synchronized Transmission)

A clutch brake is used to stop transmission input shaft rotation so that FIRST (1) or REVERSE (R) gear selection can be initiated when the vehicle is at a standstill and the engine is idling.

Press the clutch pedal all the way down to the floorboard to apply the clutch brake.

When using the clutch brake, disengage the clutch pedal and shift the transmission into either the initial starting gear or REVERSE (R). If the tooth-butting occurs between the clutching teeth, re-engage the clutch while applying light pressure to the shift lever. This will provide for a smooth shift into either FIRST (1) or REVERSE (R) gear.

NOTICE:

After engaging FIRST (1) or REVERSE (R) gear, do not use the clutch brake for upshifting and downshifting. To do so will shorten the service life of the clutch brake and gear selection shift efforts may be increased.

Parking

⚠ CAUTION:

If you don't park your vehicle properly, it can roll. If you've left the engine running, it can move very quickly. You or others could be injured. To be sure your vehicle won't move, even when you're on level ground, follow the steps below.

Two-Speed Rear Axle

1. With the engine running, shift the two-speed rear axle into low. To be sure it's in low, you'll need to move the vehicle in gear just a little.
2. Hold the regular brake pedal down with your right foot.
3. Apply the parking brake.
4. Shift the transmission to NEUTRAL or PARK (P).

Hydraulic Brakes (If Equipped)

If your vehicle has hydraulic brakes, it has either a parking brake foot pedal or hand lever. If you have the parking brake foot pedal, it is located below the instrument panel to the left of the steering column.

If you have the parking brake hand lever, it is located to the right of the driver, on the floor.

To set the foot pedal parking brake, hold the regular brake pedal down with your right foot. Push down the parking brake pedal with your left foot.

To set the hand lever parking brake, pull up on the handle with your right hand, until it stops.

If the ignition is on when the parking brake is set, the brake system warning light will come on.

To release the foot pedal parking brake, hold the regular brake pedal down. Pull the brake release handle, located just above the parking brake pedal, to release the parking brake.

To release the hand lever parking brake, push down on the handle until it stops.

If the ignition is on when the parking brake is released, the brake system warning light will go off.

NOTICE:

Driving with the parking brake on can cause your rear brakes to overheat. You may have to replace them, and you could also damage other parts of your vehicle. Always check to be sure your parking brake is fully released before you drive.

Propshaft Park Brake Burnish Procedure

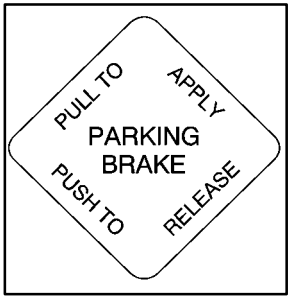
It is recommended that the propshaft-mounted parking brake be burnished as part of the new vehicle break-in. The parking brake will work best after it has been burnished following these instructions:

Make 10 stops, using the parking brake hand lever or foot pedal, from 20 mph (32 km/h) about 2 1/2 miles (4 km) apart. Between stops, drive the vehicle at 20 mph (32 km/h).

Air Brake (If Equipped)

⚠ CAUTION:

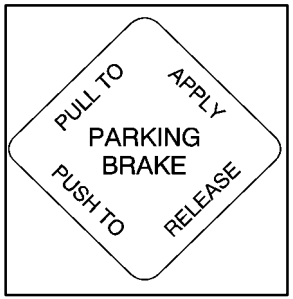
When the yellow SYSTEM PARK and the red TRAILER AIR SUPPLY knobs are both pushed in, your rig will be free to move. It could strike someone or something. When both of these knobs are pushed in, hold the regular brake pedal down to keep your rig from moving.

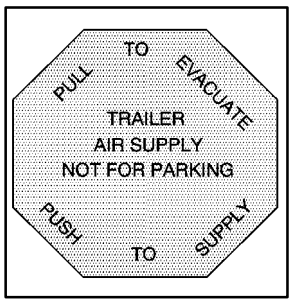


If your vehicle has air brakes, you will have this parking brake. It is located above the radio in the instrument panel.

Pulling it out applies the parking brake. The park brake light will come on when the air parking brake is applied.

Vehicles built for use as tractors or towing vehicles have two air brake controls. They look like this:





To charge a trailer's air brake system do the following:

1. Move your tractor into the proper position.
2. Apply the parking brake by pulling the yellow parking brake knob out.
3. Hook up the trailer air system properly.
4. Get into the tractor.
5. Push and hold down the regular brake pedal.
6. Push in both the yellow parking brake and the red trailer air supply knobs. This will charge your trailer's air system.

After a few minutes, the trailer system should be fully charged. When it is, the air pressure gage will show about 125 to 135 psi (862 to 931 kPa).

For driving with a trailer, the yellow and red (if equipped) knobs must be pushed in. It's the same when you're not pulling a trailer except that the red trailer air supply knob must be pulled out.

⚠ CAUTION:

If you apply any one of the air brake parking controls while the vehicle is moving, your rig will stop suddenly. If you are not ready for this, you or others could be injured. Don't apply any one of these controls while you're driving, unless you have to make an emergency stop.

If the air pressure drops below 60 to 70 psi (413 to 482 kPa), the primary brake light and warning buzzer will come on. If the air pressure drops to 35 to 45 psi (241 to 310 kPa), the red trailer air supply knob will automatically pop out and apply the spring brakes on the trailer.

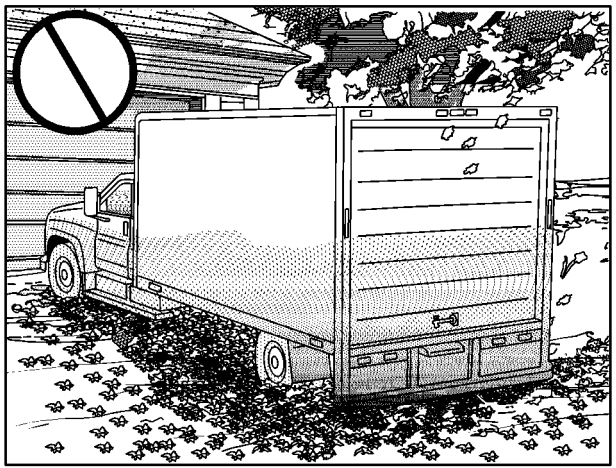
If the air pressure drops to 35 to 45 psi (241 to 310 kPa), the yellow park brake knob will automatically pop out and apply the spring brakes on the truck or tractor.

If you ever have a complete loss of air so that your air brakes automatically apply, there is a way that the tow operator can release the parking brakes to tow the vehicle. See "Towing Your Vehicle" in the Index.

⚠ CAUTION:

If your vehicle is left in gear, the engine can start if the vehicle starts to roll. This can easily happen if you have the diesel engine. Shift the transmission into NEUTRAL (N) before you leave the vehicle.

Parking Over Things That Burn



⚠ CAUTION:

Things that can burn could touch hot exhaust parts under your vehicle and ignite. Don't park over papers, leaves, dry grass or other things that can burn.

Engine Exhaust

⚠ CAUTION:

Engine exhaust can kill. It contains the gas carbon monoxide (CO), which you can't see or smell. It can cause unconsciousness and death.

You might have exhaust coming in if:

- **Your exhaust system sounds strange or different.**
- **Your vehicle gets rusty underneath.**
- **Your vehicle was damaged in a collision.**
- **Your vehicle was damaged when driving over high points on the road or over road debris.**
- **Repairs weren't done correctly.**
- **Your vehicle or exhaust system had been modified improperly.**

If you ever suspect exhaust is coming into your vehicle:

- **Drive it only with all the windows down to blow out any CO; and**
- **Have your vehicle fixed immediately.**

Running Your Engine While You're Parked (Automatic Transmission)

It's better not to park with the engine running. But if you ever have to, here are some things to know.

⚠ CAUTION:

Idling the engine with the climate control system off could allow dangerous exhaust into your vehicle. See the earlier Caution under "Engine Exhaust."

Also, idling in a closed-in place can let deadly carbon monoxide (CO) into your vehicle even if the fan is at the highest setting. One place this can happen is a garage. Exhaust -- with CO -- can come in easily. NEVER park in a garage with the engine running.

Another closed-in place can be a blizzard. See "Blizzard" in the Index.

⚠ CAUTION:

It can be dangerous to get out of your vehicle if the shift lever is not fully in PARK (P) with the parking brake firmly set. Your vehicle can roll. Don't leave your vehicle when the engine is running unless you have to. If you've left the engine running, the vehicle can move suddenly. You or others could be injured. To be sure your vehicle won't move, even when you're on fairly level ground, always set your parking brake and move the shift lever to PARK (P).

⚠ CAUTION:

It can be dangerous to get out of your vehicle without the parking brake firmly set. Your vehicle can roll. If you've left the engine running, the vehicle can move suddenly. You or others could be injured. To be sure your vehicle won't move, even when you're on fairly level ground, always set your parking brake.

Follow the proper steps to be sure your vehicle won't move.

Horn

Sound the horn by pushing the center of the steering wheel. If you have the optional air horn, it is controlled by a cord that you'll find up above and to the left of the driver. The harder you pull on the cord, the louder the air horn will sound. The air horn works only after your air brake system pressure gets up to about 115 psi (790 kPa). The air horn will work properly unless the the air brake system pressure drops below 60 psi (415 kPa).

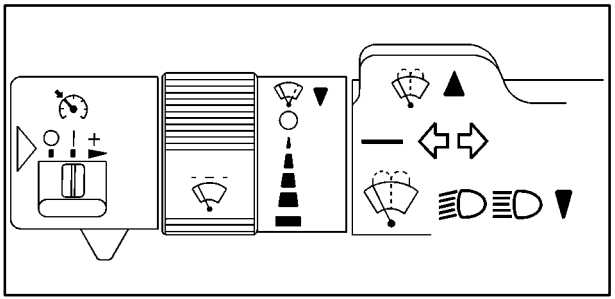
Tilt Wheel (If Equipped)

A tilt wheel allows you to adjust the steering wheel before you drive. You can raise it to the highest level to give your legs more room when you exit and enter the vehicle.

The lever that allows you to tilt the steering wheel is located on the left side of the steering column.

To tilt the wheel, hold the wheel and pull the lever. Then move the wheel to a comfortable position and release the lever to lock the wheel in place.

Turn Signal/Multifunction Lever



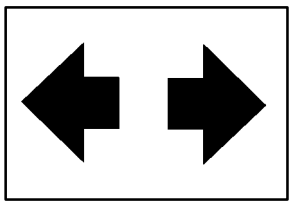
The lever located on the left side of the steering column includes the following:

- Turn and Lane-Change Signals
- Headlamp High/Low-Beam Changer
- Windshield Wipers
- Windshield Washer
- Cruise Control (Option)

Turn and Lane-Change Signals

The turn signal has two upward (for right) and two downward (for left) positions. These positions allow you to signal a turn or a lane change.

To signal a turn, move the lever all the way up or down. When the turn is finished, the lever will return automatically.



An arrow on the instrument panel cluster will flash in the direction of the turn or lane change.

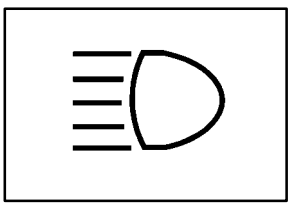
To signal a lane change, just raise or lower the lever until the arrow starts to flash. Hold it there until you complete your lane change. The lever will return by itself when you release it.

As you signal a turn or a lane change, if the arrows don't flash but just stay on, check the turn signal flasher and circuit breaker. See "Fuses and Circuit Breakers" in the Index.

If a bulb is burned out, replace it to help avoid an accident. If the arrows don't go on at all when you signal a turn, check the circuit breaker and for burned-out bulbs. (See "Fuses and Circuit Breakers" in the Index.)

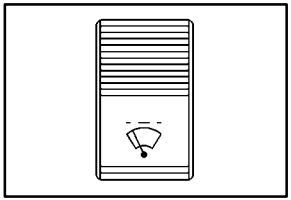
Headlamp High/Low-Beam Changer

To change the headlamps from low to high beam or high to low beam, pull the multifunction lever all the way toward you, then release it.



When the high beams are on, this light on the instrument panel cluster will also be on.

Windshield Wipers



You control the windshield wipers by turning the band with the wiper symbol on it.

○ **(Off):** Turn the band on the lever to this symbol to turn off the windshield wipers.

(Mist): For a single wiping cycle, turn the band to this symbol. Hold it there until the wipers start, then let go. The wipers will stop after one cycle. If you want more cycles, hold the band on mist longer.

You can set the wiper speed for a long or short delay between wipes. This can be very useful in light rain or snow. Turn the band to one of the four delay settings to choose the delay time. The further the band is turned upward, the longer the delay will be. The further the band is turned downward, the shorter the delay will be.

(Low Speed): For steady wiping at low speed, turn the band toward you to the first solid band below the delay settings.

(High Speed): For high-speed wiping, turn the band further, to the second solid band below the delay settings. To stop the wipers, move the band to off.

Be sure to clear ice and snow from the wiper blades before using them. If they are frozen to the windshield, carefully loosen or thaw them. If your blades do become worn or damaged, get new blades or blade inserts. For more information, see “Windshield Wiper Blade Replacement” in the Index.

Heavy snow or ice can overload your wipers. The windshield wiper motor is protected from overload by a circuit breaker and a fuse. If the motor overheats due to heavy snow or ice the wiper will stop until the motor cools. Although the circuit is protected from electrical overload, overload due to heavy snow or ice may cause wiper linkage damage. Always clear ice and heavy snow from the windshield before using your windshield wipers.

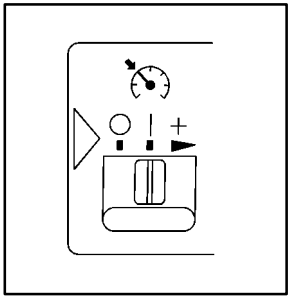
Windshield Washer

(Washer Fluid): There is a paddle marked with the windshield washer symbol at the top of the multifunction lever. To spray washer fluid on the windshield, press the paddle. The wipers will clear the window and then either stop or return to your preset speed.

CAUTION:

In freezing weather, don't use your washer until the windshield is warmed. Otherwise the washer fluid can form ice on the windshield, blocking your vision.

Cruise Control (Option)



If your vehicle has this feature, it is located at the end of your multifunction lever.

(Set): Pressing in this button at the end of the lever sets the cruise control speed.

(Off): Moving the switch to this position turns off the cruise control.

(On): Moving the switch to this position turns on the cruise control.

(Resume/Accelerate): Moving the switch to this position turns on resume/accelerate.

With cruise control, you can maintain a speed of about 30 mph (48 km/h) or more without keeping your foot on the accelerator. Cruise control does not work at speeds below about 30 mph (48 km/h).

If you have an automatic transmission and you apply your brakes, the cruise control will shut off.

If you have a manual transmission and you apply your brakes or push the clutch pedal, the cruise control will shut off.

⚠ CAUTION:

- **Cruise control can be dangerous where you can't drive safely at a steady speed. So, don't use your cruise control on winding roads or in heavy traffic.**
- **Cruise control can be dangerous on slippery roads. On such roads, fast changes in tire traction can cause needless wheel spinning, and you could lose control. Don't use cruise control on slippery roads.**

Setting Cruise Control

⚠ CAUTION:

If you leave your cruise control switch on when you're not using cruise, you might hit a button and go into cruise when you don't want to. You could be startled and even lose control. Keep the cruise control switch off until you want to use cruise control.

1. Move the cruise control switch to on.
2. Get up to the speed you want.
3. Press in the set button at the end of the lever and release it.
4. Take your foot off the accelerator pedal. The accelerator pedal will not go down.

Resuming a Set Speed

Suppose you set your cruise control at a desired speed and then you apply the brake. This, of course, shuts off the cruise control. But you don't need to reset it.

Once you're going about 30 mph (48 km/h) or more, you can move the cruise control switch briefly from on to resume/accelerate.

The vehicle will return to your chosen speed and stay there.

If you hold the switch at resume/accelerate, the vehicle will keep going faster until you release the switch or apply the brake. So unless you want to go faster, don't hold the switch at resume/accelerate.

Increasing Speed While Using Cruise Control

There are two ways to go to a higher speed:

- Use the accelerator pedal to get to the higher speed. Press the button at the end of the lever, then release the button and the accelerator pedal. You'll now cruise at the higher speed.
- Move the cruise switch from on to resume/accelerate. Hold it there until you get up to the speed you want, and then release the switch. To increase your speed in very small amounts, move the switch briefly to resume/accelerate. Each time you do this, your vehicle will go about 1 mph (1.6 km/h) faster.

Reducing Speed While Using Cruise Control

Press in the button at the end of the lever until you reach the lower speed you want, then release it.

To slow down in very small amounts, tap the button briefly. Each time you do this, you'll go 1 mph (1.6 km/h) slower.

Passing Another Vehicle While Using Cruise Control

Use the accelerator pedal to increase your speed. When you take your foot off the pedal, your vehicle will slow down to the cruise control speed you set earlier.

Using Cruise Control on Hills

How well your cruise control will work on hills depends upon your speed, load and the steepness of the hills. When going up steep hills, you may want to step on the accelerator pedal to maintain your speed. When going downhill, you may have to brake or shift to a lower gear to keep your speed down. Of course, applying the brake or clutch takes you out of cruise control. Many drivers find this to be too much trouble and don't use cruise control on steep hills.

Ending Cruise Control

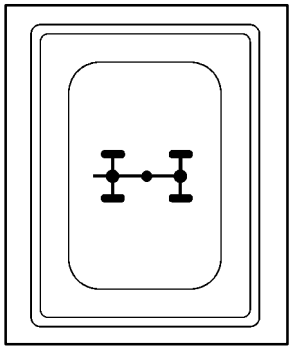
There are four different ways to turn off the cruise control:

- Step lightly on the brake pedal (manual and automatic transmissions).
- Press the clutch pedal to the floor (manual transmissions).
- Move the cruise switch to off, or
- Shift the transmission to NEUTRAL (N).

Erasing Speed Memory

When you turn off the ignition, your cruise control set speed memory is erased.

Inter-Axle Differential Lock Control (If Equipped)



If your vehicle has this feature, the switch is located in the center of the instrument panel.

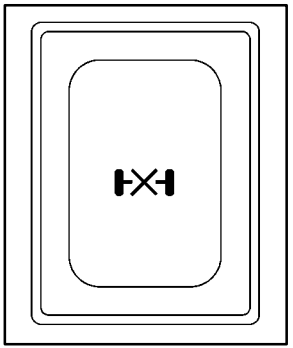
If you're approaching a slippery surface where it looks like one or even all of the wheels may start to slip, you can press the bottom of this switch. It locks your rear differentials so that power is transmitted equally to both rear axles.

Let up on the accelerator before you turn on your inter-axle differential lock. When you turn on this control, the diff lock indicator on the center of the instrument panel will light.

NOTICE:

Activating the inter-axle differential lock when the rear wheels are actually spinning freely, as they might on ice or snow, can cause you to lose control of the vehicle. It can also damage the axles. Turn on this control only when the wheels are not spinning freely.

Rear Axle Differential Lock Control (If Equipped)



If your vehicle has a controlled traction or locking differential axle, the switch is located in the center of the instrument panel. You'll see this control on single rear axle vehicles.

If you're approaching a slippery surface where it looks like one or even both wheels may start to slip, you can press the bottom of this switch. It locks your rear differential so that power is transmitted equally to both rear wheels.

Let up on the accelerator before you turn on your rear axle differential lock.

NOTICE:

Activating the rear-axle differential lock when the rear wheels are actually spinning freely, as they might on ice or snow, can cause you to lose control of the vehicle. It can also damage the axle. Turn on this control only when the wheels are not spinning freely.

Trailer Brake Hand Control Valve (Option)

If your vehicle has this feature, it is located near the center console on the floor.

This feature lets you apply the trailer brakes without applying the tractor brakes. You can apply the trailer brakes a little, or apply them all the way, if needed.

Press the trailer brake hand control valve downward to apply the trailer brakes. Pull the hand control valve upward to release the trailer brakes.

Use this control only when you're driving. Don't use it for parking or to hold the rig on a hill.

⚠ CAUTION:

Using the trailer brake hand control for parking or for holding the vehicle on a hill may not keep the vehicle from rolling. This can happen if someone hits the valve by accident, or if air pressure bleeds from the system. If the vehicle rolls, you or others could be injured. To park the vehicle or hold it on a hill, use the parking brake properly.

Exterior Lamps

The control located to the left of the steering column operates the exterior lamps.

The exterior lamp control has four positions:

OFF: Turning the control to this position turns off all lamps except the Daytime Running Lamps (DRL).

(Parking Lamps): Turning the control to this position turns on the parking lamps, together with the following:

- Marker Lamps
- Taillamps
- License Plate Lamps
- Instrument Panel Lights

(Headlamps): Turning the control to this position turns on the headlamps, together with the previously listed lamps and lights.

You can switch your headlamps from low to high beam by pulling the turn signal/multifunction lever toward you. Pull the lever toward you again to return to low beam.

A circuit breaker protects your headlamps. If you have an electrical overload, your headlamps will flicker on and off. Have your headlamp wiring checked right away if this ever happens.

Headlamps On Reminder (If Equipped)

If you have this system, a tone will sound when your headlamps and/or parking lamps are turned on and your ignition is in LOCK or ACCESSORY.

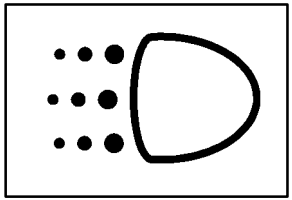
Daytime Running Lamps

Daytime Running Lamps (DRL) can make it easier for others to see the front of your vehicle during the day. DRL can be helpful in many different driving conditions, but they can be especially helpful in the short periods after dawn and before sunset. Fully functional daytime running lamps are required on all vehicles first sold in Canada.

The DRL system will make your headlamps come on at reduced brightness when the following conditions are met:

- The ignition is on,
- the exterior lamp control is off, and
- the parking brake is released.

When the DRL are on, only your headlamps will be on. The taillamps, sidemarker and other lamps won't be on. Your instrument panel won't be lit up either.



When it begins to get dark, your DRL indicator light is a reminder to turn the headlamps on. The other lamps that come on with your headlamps, will also come on.

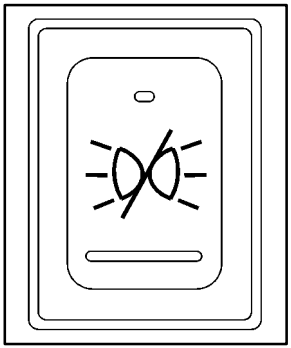
When you turn the headlamps off, the regular lamps will go off, and your low-beam headlamps will change to the reduced brightness of DRL.

To idle your vehicle with the DRL off, set the parking brake. The DRL will stay off until you release the parking brake.

As with any vehicle, you should turn on the regular headlamp system when you need it.

Marker Lamp Defeat Switch

If your vehicle has this feature, you can manually blink the marker and clearance lamps.



The marker lamp defeat switch is located in the instrument panel switchbank.

Press and hold the bottom of the switch to turn off the marker and clearance lamps. When you release the switch, the marker and clearance lamps will come back on.

Interior Lamps

Instrument Panel Brightness Control

This feature controls the brightness of the instrument panel lights.

The thumbwheel for this feature is located to the right of the exterior lamp control.

Turn the thumbwheel up to brighten the lights. When the thumbwheel is moved to the first position, the radio display and transmission selection display will go to full intensity. The instrument panel cluster will also be dimly lit. Moving the thumbwheel up to the next position will activate the interior dome lamps.

Dome Lamps

The dome lamps will come on when you open a door.

You can also turn the dome lamps on by moving the thumbwheel, located to the right of the exterior lamp control, all the way up to the second position. In this position, the dome lamps will remain on whether a door is open or closed.

You can use the dome override button to set the dome lamps to automatically come on when a door is open, or to remain off.

The dome override button is located below the exterior lamp control.

If the dome override button is pushed in, the dome lamps will not come on. Use this feature when you want to leave your door(s) open for an extended period of time and do not want to run the battery down.

If the dome override button is in the out position, the interior lamps will work as usual.

Illuminated Entry

The delayed illumination feature will allow you to enter or exit your vehicle with the lights on for about 20 seconds, after the door is closed or the ignition is cycled.

Reading Lamps (If Equipped)

If your vehicle has reading lamps, press the button next to the lamp to turn the lamp on or off.

Mirrors

Inside Rearview Mirror (If Equipped)

Pull the tab under the mirror toward you to reduce glare from headlamps behind you after dark. Push the tab away from you to restore the mirror to the daytime position.

Outside Rearview Mirrors

Adjust the outside rearview mirrors so you can see a little of the side of your vehicle, and the area beside your vehicle from a comfortable driving position. Some mirrors can be folded in to enter narrow passageways.

Power Outside Rearview Mirrors (If Equipped)

If you have power outside rearview mirrors, they can be adjusted from inside the vehicle.

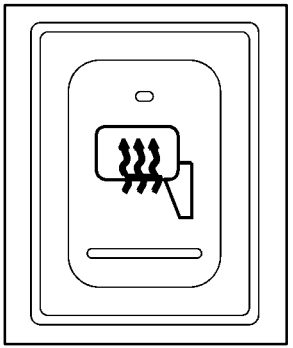
The control for this feature is located on the driver's door.

Select the mirror you want to move by turning the switch clockwise to adjust the passenger's side mirror, or counterclockwise to adjust the driver's side mirror. The center position is neutral.

Then, adjust the mirror by pressing the outer arrows on the switch until the mirror is in the desired position.

Heated Outside Rearview Mirrors (If Equipped)

If your vehicle has this feature, your outside rearview mirrors can be defrosted.



The switch is for this feature is located in the instrument panel switchbank.

Press the bottom of the switch to turn the heated outside rearview mirrors on. The switch indicator light will be come on and stay on whenever the heated outside rearview mirrors are activated.

Your rear window defogger will also come on each time this feature is activated. If your vehicle has a rear window defogger, See "Rear Window Defogger" in the index.

Convex Outside Mirrors

Your vehicle has convex mirrors on the lower quarter of both the driver's and passenger's side rearview mirrors. A convex mirror's surface is curved so you can see more from the driver's seat.

⚠ CAUTION:

A convex mirror can make things (like other vehicles) look farther away than they really are. If you cut too sharply into the right or left lane, you could hit a vehicle. Check your regular outside mirrors (or your inside mirror, if you have one) before changing lanes.

Storage Compartments

Your vehicle includes a number of storage compartments for storage of often-used items.

Some vehicles have storage areas in the instrument panel. Use these spaces for items such as gloves or small books. Another small storage area may be located overhead. This area can be used to store your sunglasses.

Some vehicles have a storage area behind the rear seat. Other models may have more storage areas underneath the front passenger's bench seat.

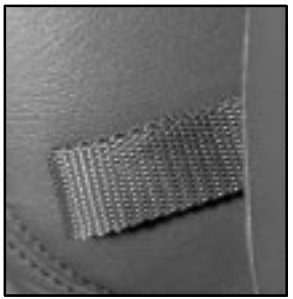
All models have storage pockets and cupholders on each of the doors. Some models may have additional cupholders in the center floor console.

All models also have storage compartments located beneath the floorboard on both sides of the vehicle.

Center Console Storage (If Equipped)

Your vehicle may have a center console compartment between the bucket or suspension seats.

The back of your center bench seat may also fold forward to reveal a console compartment.



The release strap for the center console is located between the center seat and passenger's seat.

To expose the center console storage compartment, pull the strap to release the seatback. Then fold the seatback forward.

To open the center console storage compartment, Press the release button and lift the lid rearward. With the lid closed, it can be used as a clipboard to hold papers in place.

Before returning the seatback to the upright position, make sure the console is snapped shut. Lift the seatback all the way up until it clicks. Push and pull on the seatback to make sure the seat is locked in place.

Ashtrays and Cigarette Lighter

Your vehicle has an ashtray and a cigarette lighter located in the center floor console. To open the removeable ashtray, flip open the top.

NOTICE:

If you store paper or other things that burn in your ashtrays, they could be set on fire by cigarettes or other smoking materials. That could cause a fire and possibly damage your vehicle. Do not store papers and other things that burn in your ashtrays.

To use the cigarette lighter, push it in all the way and let it go. When it's ready, it will pop back out by itself.

NOTICE:

Holding a cigarette lighter in with your hand while it's heating can make it overload, damaging the lighter and the heating element. Just push the lighter all the way in and let it go. When it's done, it will pop back out by itself.

Sun Visors

To block out glare, you can swing down the visors. You can also swing them out to block glare from the side.

Accessory Power Outlets

With accessory power outlets, you can plug in auxiliary electrical equipment such as a cellular telephone or CB radio.

The accessory power outlets are located on the passenger's side of the instrument panel.

To use an outlet, pull the cover down. When not using it, always cover the outlet with the protective cap.

These circuits are protected by a fuse and have maximum current levels.

NOTICE:

When using the accessory power outlets, maximum load of any electrical equipment should not exceed 14 amps. Be sure to turn off any electrical equipment when not in use. Leaving electrical equipment on for extended periods can drain the battery.

Certain electrical accessories may not be compatible with the accessory power outlet and could result in blown vehicle or adapter fuses. If you experience a problem, see your dealer for additional information on accessory power outlets.

NOTICE:

Adding some electrical equipment to your vehicle can damage it or keep other things from working as they should. This wouldn't be covered by your warranty. Check with your dealer before adding electrical equipment, and never use anything that exceeds the amperage rating.

When adding electrical equipment, be sure to follow the proper installation instructions included with the equipment.

NOTICE:

Power outlets are designed for accessory plugs only. Do not hang any type of accessory or accessory bracket from the plug. Improper use of the power outlet can cause damage not covered by your warranty.

Trailer Connections (C4/C5 Models Only) (If Equipped)

Heavy-Duty Trailer Wiring Package

Your vehicle may be equipped with an eight-wire trailer towing harness. This harness, with a seven-pin universal heavy-duty trailer connector, is attached to a bracket on the platform hitch.

The Center High-Mounted Stoplamp (CHMSL) wire is tied next to the trailer wiring harness for use with a trailer.

The eight-wire harness contains the following trailer circuits:

- Yellow: Left Stop/Turn Signal
- Dark Green: Right Stop/Turn Signal
- Brown: Taillamps
- White: Ground
- Light Green: Back-up Lamps
- Light Blue: CHMSL
- Red: Battery Feed
- Dark Blue: Trailer Brake

Trailer Connections (C6/C7/C8 Models Only) (If Equipped)

If your vehicle has these trailer connections, they are located at the rear of the cab for a tractor and at the rear of the chassis when towing a trailer. There will be an air connection and an electrical connection.

Be sure that the couplings to the trailer are made correctly.

Air Connections

If you are not connecting the trailer air line connections to another piece of equipment, be sure to replace their protective caps.

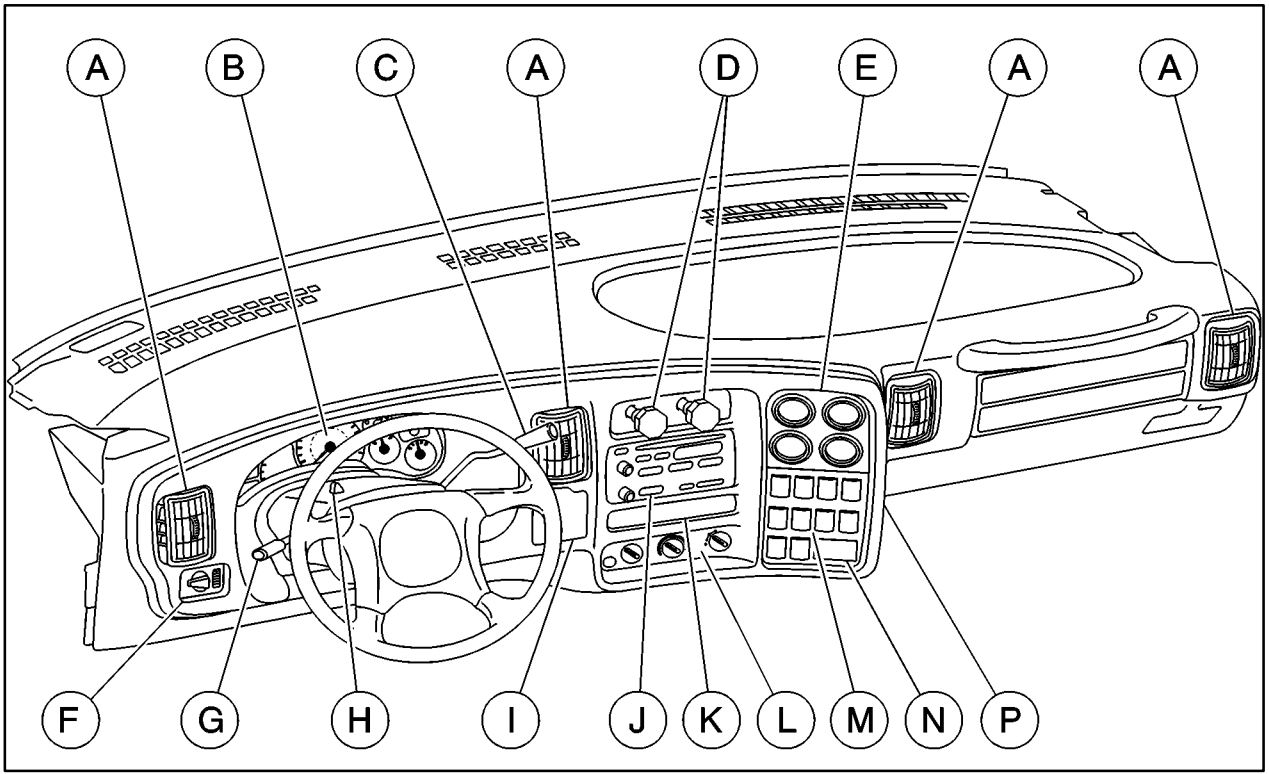
Electrical Connections

This system is a seven-wire cable that will connect to the trailer, supplying power to the trailer's lighting system. When not in use, it is stored in the trailer air-hose storage bracket.

NOTICE:

Starting in 1998, the center pin (also known as the auxiliary circuit) of the seven-pin trailer electrical connector will be wired to provide continuous power for the trailer anti-lock brake systems when the ignition key is in the on position. Care should be taken to insure that continuous power on this circuit will not cause damage to the trailer electrical system.

Consult with the trailer manufacturer for the proper operation and checking procedures for the trailer anti-lock brake systems.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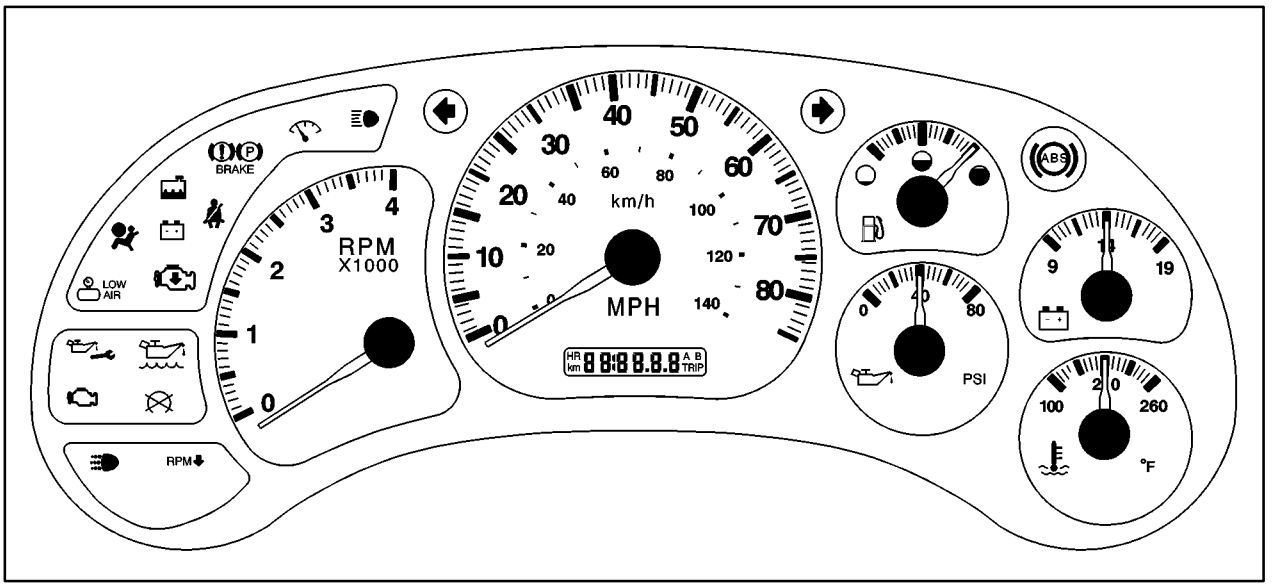
The main components of your instrument panel are the following:

A. Vents
B. Instrument Panel Cluster
C. Column Shift Lever (If Equipped)
D. Air Brake Control(s) (If Equipped)
E. Auxiliary Gages (If Equipped)
F. Exterior Lamp Control
G. Turn Signal Multifunction Lever
H. Hazard Warning Flashers Button
I. Auxiliary Switches (If Equipped)
J. Audio System or Storage Area
K. Auxiliary Warning Lights
L. Comfort Controls
M. Instrument Panel Switchbank
N. Air Bag Off Switch (If Equipped)
P. Accessory Power Outlets

Instrument Panel Cluster

Your instrument panel cluster is designed to let you know at a glance how your vehicle is running. You'll know how fast your going, about how much fuel is left and many other things you'll need to drive safely and economically.



United States, Diesel Engine shown, Canada and Gasoline Engine similar

Speedometer and Odometer

Your speedometer lets you see your speed in both miles per hour (mph) and kilometers per hour (km/h).

Your odometer shows how far your vehicle has been driven, in either miles (used in the United States) or kilometers (used in Canada).

Trip Odometer

The trip odometer can tell you how far your vehicle has been driven since you last set the trip odometer to zero.

While the engine is running, press the reset button, located to the right of the trip odometer, to toggle between the trip odometer and the regular odometer. Holding the reset button for two seconds while the engine is running and the trip odometer is displayed, will reset it.

To display the odometer reading with the ignition off, press the reset button.

Engine Speed Limiting

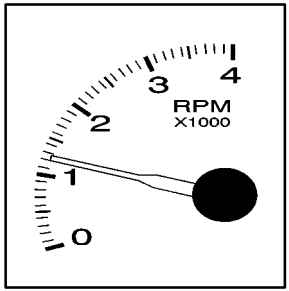
All engines have electronic engine speed limiting. The engine limited speeds range between 2,900 and 4,400 rpm depending on engine option content.

Engine Road Speed Governor

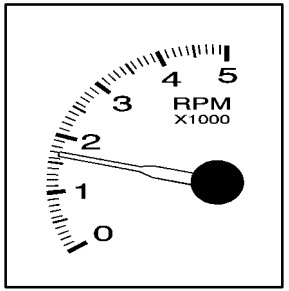
This system controls maximum vehicle speed automatically and reduces engine power until vehicle speed gets down to maximum governed speed.

A 75 mph (120 km/h) road speed governor is standard for most models, but can be programmed to any speed below that default setting. Other models have a default setting of 80 to 85 mph (128 to 136 km/h). You may have a label on the headliner of your vehicle with more information on your engine road speed governor. See your dealer for assistance with programming your engine limited speed.

Tachometer



7.2L Caterpillar Diesel Engine and 7.8L DURAMAX Diesel Engines



Gasoline and 6.6L DURAMAX Diesel Engines

This gage shows the engine speed in revolutions per minute (rpm).

Warning Lights, Gages and Indicators

This part describes the warning lights and gages that may be on your vehicle. The pictures will help you locate them.

Warning lights and gages can signal that something is wrong before it becomes serious enough to cause an expensive repair or replacement. Paying attention to your warning lights and gages could also save you or others from injury.

Warning lights come on when there may be or is a problem with one of your vehicle's functions. As you will see in the details on the next few pages, some warning lights come on briefly when you start the engine just to let you know they're working. If you are familiar with this section, you should not be alarmed when this happens.

Gages can indicate when there may be or is a problem with one of your vehicle's functions. Often gages and warning lights work together to let you know when there's a problem with your vehicle.

When one of the warning lights comes on and stays on when you are driving, or when one of the gages shows there may be a problem, check the section that tells you what to do about it. Please follow this manual's advice. Waiting to do repairs can be costly -- and even dangerous. So please get to know your warning lights and gages. They're a big help.

Safety Belt Reminder Light

When the key is turned to RUN or START, a light will come on for several seconds to remind people to fasten their safety belts.

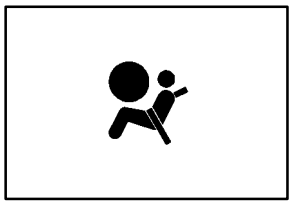
The safety belt light will also come on and stay on for several seconds.

Safety Belt Reminder Tone (Option)

When the key is turned to RUN or START, a tone will sound for several seconds to remind people to fasten their safety belts.

Air Bag Readiness Light

There is an air bag readiness light on the instrument panel, which shows the airbag symbol. The system checks the air bag's electrical system for malfunctions. The light tells you if there is an electrical problem. The system check includes the air bag sensors, the air bag modules, the wiring, the passenger air bag suppression circuit and the crash sensing and diagnostic module. For more information on the air bag system, see "Air Bag" in the Index.



This light will come on when you start your vehicle, and it will flash for a few seconds. Then the light should go out. This means the system is ready.

If the air bag readiness light stays on after you start the vehicle or comes on when you are driving, your air bag system may not work properly. Have your vehicle serviced right away.

⚠ CAUTION:

If the air bag readiness light stays on after you start your vehicle, it means the air bag system may not be working properly. The air bags in your vehicle may not inflate in a crash, or they could even inflate without a crash. To help avoid injury to yourself or others, have your vehicle serviced right away if the air bag readiness light stays on after you start your vehicle.

The air bag readiness light should flash for a few seconds when you turn the ignition key to RUN or START. If the light doesn't come on then, have it fixed so it will be ready to warn you if there is a problem.

Air Bag Off Light (If Equipped)

When you turn the right front passenger's air bag off, this light will come on and stay on to remind you that the air bag has been turned off. This light will go off when you turn the air bag back on again. See "Air Bag Off Switch" in the Index for more on this, including important safety information.

United States

Canada

⚠ CAUTION:

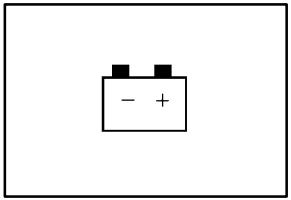
If the right front passenger's air bag is turned off for a person who isn't in a risk group identified by the national government, that person won't have the extra protection of an air bag. In a crash, the air bag wouldn't be able to inflate and help protect the person sitting there. Don't turn off the passenger's air bag unless the person sitting there is in a risk group. See "Air Bag Off Switch" in the Index for more on this, including important safety information.

⚠ CAUTION:

If the air bag readiness light ever comes on when you have turned off the air bag, it means that something may be wrong with the air bag system. The right front passenger's air bag could inflate even though the switch is off.

If this ever happens, don't let anyone whom the national government has identified as a member of a passenger air bag risk group sit in the right front passenger's position (for example, don't secure a rear-facing child restraint in the right front passenger's seat) until you have your vehicle serviced.

Charging System Indicator Light



The charging system indicator light may be located in the instrument panel cluster, or with the auxiliary warning lights in the center of the instrument panel.

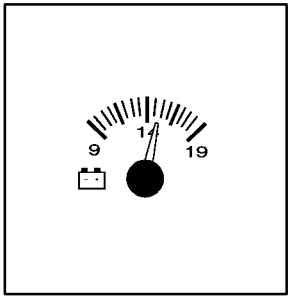
It should come on briefly when you turn on the ignition, before the engine is running, as a check to show that it is working.

If it stays on, or comes on while you are driving, have it checked right away. You could have a loose generator drive belt or some other problem.

Driving while this light is on will drain your battery. If you must drive a short distance with the light on, turn off your radio and other accessories.

Sustained driving with a generator failure could result in a lack of back-up braking if the engine quits or the power steering pump should fail.

Voltmeter



When your engine is running, the voltmeter gage, at the right side of the instrument panel cluster, shows the charging system voltage.

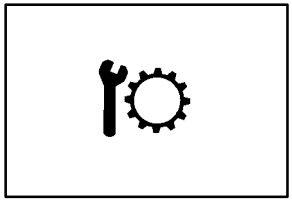
Readings in either warning zone indicate a possible problem in the electrical system.

Readings in the low warning zone may occur when a large number of electrical accessories are operating in the vehicle and the engine is left at an idle for an extended period. This condition is normal since the charging system may not be able to provide full power at engine idle. As engine speeds are increased, this condition should correct itself because higher engine speeds allow the charging system to create maximum power.

You can only drive a short time on the battery. Be sure to shut off the radio, the fan or any unnecessary accessories and have the system serviced.

Service Transmission Warning Light (If Equipped)

If your vehicle has an Allison automatic transmission, certain transmission malfunctions will turn this light on.



This light is located with the auxiliary warning lights in the center of the instrument panel.

If this light comes on while you are driving, do not use the transmission shift control. Using the transmission shift control may result in the loss of forward gears. The computer for the transmission senses a problem and chooses a gear to stay in so that you can drive the vehicle in that gear. You may not be able to drive as fast or back up when this light is on.

NOTICE:

If the service transmission warning light comes on while you are driving, it is a warning that making a transmission "range" change could leave you stranded. The vehicle may not continue to move if you change gears with the transmission shift control. The transmission can't operate in all gears because something is wrong. Leave the shift control alone and drive directly to a GM dealer for service. If you can't go in for service immediately, have the vehicle towed.

Range Inhibited Warning Indicator (If Equipped)

If your vehicle is equipped with an Allison 1000/2000/2400 series automatic transmission, a lighted bar under the current gear selected will flash.

If your vehicle is equipped with an Allison MD automatic transmission, the current gear selected on the pushbutton display will flash.

The flashing bar or gear selection indicates that transmission range shifts may not occur.

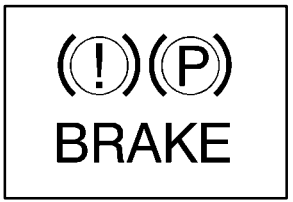
For detailed information on shift inhibit limitations, see the Allison Automatic Transmission Operator's Manual in your vehicle for further information.

Brake System Warning Light

Your vehicle has either hydraulic or air brakes. Each system has different warning lights.

Hydraulic Brake System Warning Lights

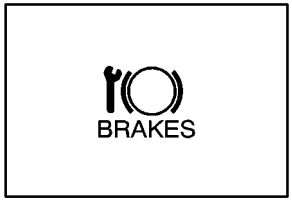
Vehicles with hydraulic systems have two brake system warning lights on the instrument panel.



If the BRAKE warning light comes on, it means that the fluid level in the master cylinder reservoir is low or there is another problem with your hydraulic brakes.

When it comes on, you will also hear a warning tone.

The BRAKE warning light may come on, and the warning tone may sound, when you're turning and braking at the same time. This is normal. See "Hydraulic Brake Systems" in the Index.



If the amber SERVICE BRAKES SOON warning light comes on, it means that there is something wrong in the brake system.

When this light comes on, you will also hear a warning tone. If this light comes on, have the system repaired immediately.

Both of these lights should come on briefly every time you start the engine. If they don't come on then, have them fixed so they will be ready to warn you if there's a problem. If one or both of these warning lights stay on after you start the engine, there could be a brake problem. Have your brake system inspected right away.

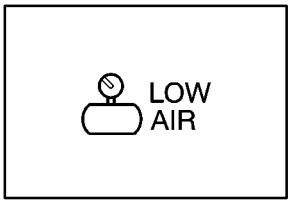
If one or both of these lights come on and stay on while you are driving, pull off the road and stop carefully. You may notice that the pedal is harder to push. Or, the pedal may go closer to the floor. It may take longer to stop. If the BRAKE light is still on, have the vehicle towed for service. See "Towing Your Vehicle" in the Index. See "Hydraulic Brake Systems" in the Index for more information.

⚠ CAUTION:

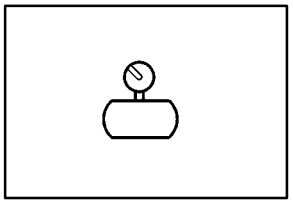
Your brake system may not be working properly if a brake system warning light is on. Driving with a brake system warning light on can lead to an accident. If the light is still on after you've pulled off the road and stopped carefully, have the vehicle towed for service.

Air Brake System Warning Light

Vehicles with air brake systems have one brake system warning light on the instrument panel.



United States



Canada

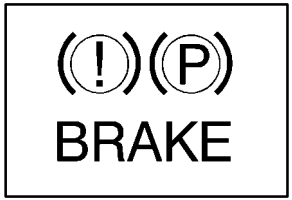
The LOW AIR warning light should come on, as a check, whenever you start the engine. However, it is designed to come on, and stay on, when brake reservoir pressure has dropped below 60 psi (410 kPa).

When this warning light comes on, you will also hear a warning tone. If the warning light and tone come on while you are driving, you should drive only as far as the nearest point of safety and then stop the vehicle. Here's a very important thing for you to know:

⚠ CAUTION:

If the LOW AIR warning light comes on and the warning tone sounds, the vehicle can stop suddenly and without further warning. This is because the parking brake will come on if the pressure falls below 35 to 45 psi (240 to 310 kPa). You or others could be injured. If the LOW AIR warning light comes on and the warning tone sounds, stop as soon as you can. You won't know how quickly the system is losing pressure, so be aware that the parking brake may come on suddenly.

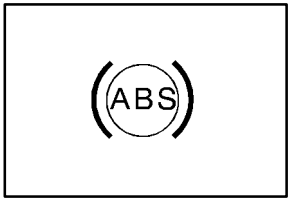
Parking Brake Indicator Light



Your vehicle has a brake indicator light. When the ignition is on, this light will come on when you set your parking brake. The light will stay on if your parking brake doesn't release fully.

This light should also come on when you turn the ignition key to START. If it doesn't come on then, have it fixed so it will be ready to remind you if the parking brake is applied or hasn't released fully.

Anti-Lock Brake System Warning Light

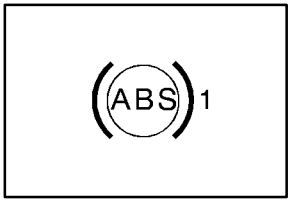


With the anti-lock brake system, this light will come on when you start your engine and it may stay on for several seconds. That's normal.

If the light stays on, or comes on when you're driving, your vehicle needs service. If the BRAKE or LOW AIR warning light isn't on, you still have brakes, but you don't have the anti-lock brake feature. If the BRAKE and/or LOW AIR warning light is on, you don't have anti-lock brakes and there's a problem with your regular brakes. See "Brake System Warning Light" earlier in this section.

The anti-lock brake system warning light should come on briefly when you start the engine. If the light doesn't come on then, have it fixed so it will be ready to warn you if there is a problem.

Trailer Anti-Lock Brake System Warning Light

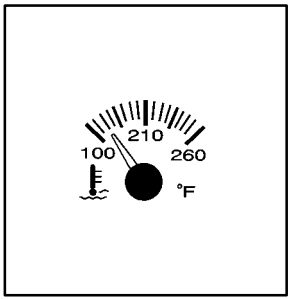


If your vehicle is connected to an anti-lock brake system equipped trailer, this light should come on briefly, as a check, when you turn on the ignition.

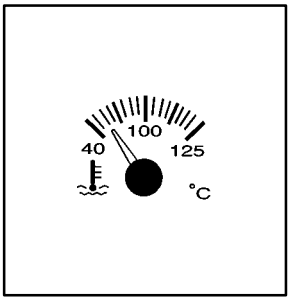
When this light comes on and stays on, it means there is something wrong in the trailer anti-lock brake system. Have the system repaired immediately.

If an anti-lock brake system equipped trailer is not connected, this light is not functional.

Engine Coolant Temperature Gage



United States

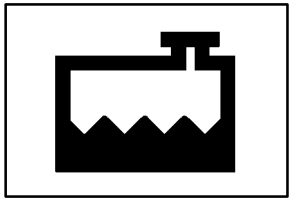


Canada

This gage shows the engine coolant temperature. If the gage pointer moves into the red area, your engine coolant might have overheated and your engine may be too hot. You should pull off the road, stop your vehicle and turn off the engine as soon as possible.

See “Engine Overheating” in the Index. If you have a Caterpillar® diesel engine, also see your Caterpillar® Operation & Maintenance Manual.

Low Coolant Warning Light



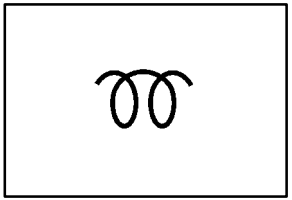
You have a low coolant warning light. If this light comes on, your system is low on coolant and the engine may overheat.

The warning light should come on briefly, as a check, when you turn on the ignition.

When it comes on, you will also hear a warning tone at several beats per second for 10 seconds. See “Engine Coolant” in the Index and have your vehicle serviced as soon as you can.

This light may also come on if your vehicle is equipped with the automatic engine shutdown system and engine shutdown has begun. See “Engine Automatic Shutdown” in the Index.

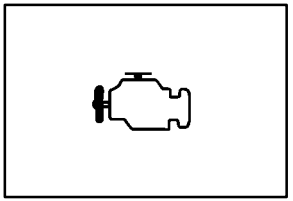
Wait to Start Indicator (If Equipped)



This light in the center of the instrument panel will come on when the intake heater is on and the ignition key is in RUN.

Wait until the indicator light turn off before turning the ignition key to START. See “Engine Starting” in your Caterpillar® Operation & Maintenance Manual for more information.

Malfunction Indicator Lamp (Service Engine Soon Light)



If this light comes on or flashes while you are driving, two things may happen.

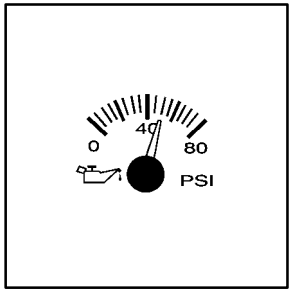
First, you won't notice any difference in engine performance, but your tail pipe emissions may increase. Second, your engine may not run properly or may stall without warning. If either of these things happen, drive or tow your vehicle to your dealer for service.

This light should come on when the ignition is on, but the engine is not running, as a check to show you it is working. If it does not come on at all, have it repaired.

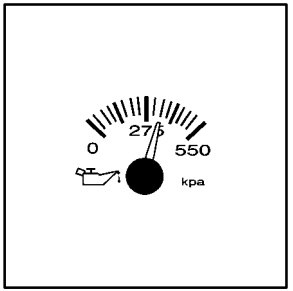
NOTICE:

If you keep driving your vehicle with this light on, after a while, your emission controls may not work as well, your fuel economy may not be as good and your engine may not run as smoothly. This could lead to costly repairs that may not be covered by your warranty.

Oil Pressure Gage



United States



Canada

The engine oil pressure gage, on the lower right portion of your instrument panel cluster, shows engine oil pressure in psi (pounds per square inch) or in kPa (kilopascals). Oil pressure may vary with outside temperature and oil viscosity, but readings of 30 to 40 psi (205 to 275 kPa) on gasoline engines at operating temperature and moderate road speeds are normal. If you have a diesel engine, the normal operating range should be between 35 and 70 psi (240 to 480 kPa).

A reading in the low pressure zone may be caused by a dangerously low oil level or other problem.

If you have a Caterpillar® diesel engine, also see your Caterpillar® Operation & Maintenance Manual.

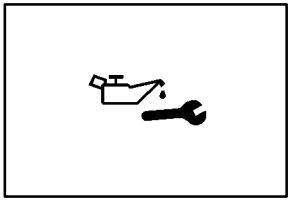
⚠ CAUTION:

Don't keep driving if the oil pressure is low. If you do, your engine can become so hot that it catches fire. You or others could be burned. Check your oil as soon as possible and have your vehicle serviced.

NOTICE:

Damage to your engine from neglected oil problems can be costly and is not covered by your warranty.

Change Oil Light

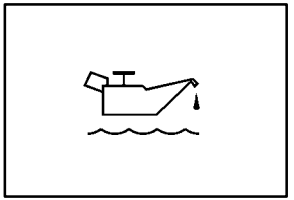


The change oil light should come on briefly as a bulb check when you start the engine. If the light doesn't come on, have it serviced.

If the change oil soon light comes on and stays on after you start the engine, have the oil changed.

For additional information, see "Engine Oil, When to Change" in the Index. To reset the change oil light, see "GM Oil Life System™" in the Index.

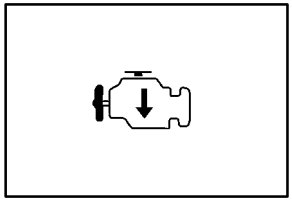
Low Oil Level Light



This light should come on as a check, when you start your engine. If the light fails to come on, have it repaired as soon as possible so you will be aware when the oil level is low.

If this light comes on and stays on, it means your engine is low on oil. You need to check the oil level right away. See "Checking Engine Oil" in the Index for further information.

Reduced Engine Power Warning Light

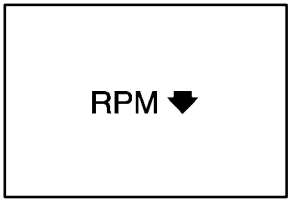


If the check engine and reduced engine power lights are on, the throttle may be disabled, and a noticeable reduction in the vehicle's performance may occur.

If the reduced engine power light is on, but there is no reduction in performance, proceed to your destination. The performance may be reduced the next time the vehicle is driven. The vehicle may be driven at a reduced speed while the reduced engine power light is on, but acceleration and speed may be reduced.

Anytime the check engine light stays on, the vehicle should be taken to an authorized GM dealer as soon as possible for service.

Engine Overspeed Warning Light (If Equipped)

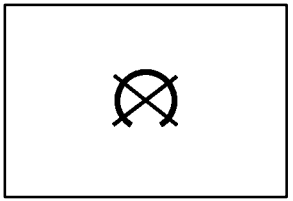


If your vehicle has this light, it will come on if your engine is operating at too many revolutions per minute (rpm).

It will also come on for a moment as a check when you start your engine.

If it comes on when you're driving, it means that your rpm are too great. Reduce your engine speed at once.

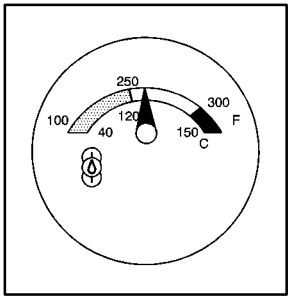
Engine Shutdown Warning Light (If Equipped)



If your vehicle has the engine shutdown feature, this light will come on when engine shutdown is active.

For more information, see “Engine Alarm and Automatic Shutdown” in the Index.

Transmission Temperature Gage (If Equipped)



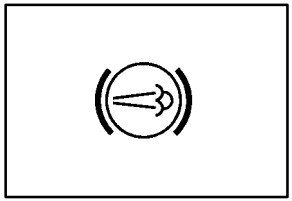
If you have an automatic transmission, this gage is located above the switchbank in the center of the instrument panel.

When your ignition is on, the gage shows the temperature of the transmission oil. A reading in the warning zone, the red area beginning at 300°F (150°C), means you must stop driving and check into the cause. One possible cause is a low oil level in the transmission.

NOTICE:

If you drive when the transmission temperature gage is in the warning zone, you can badly damage the transmission.

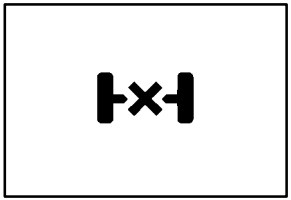
Exhaust Brake Indicator Light (If Equipped)



If your vehicle is equipped with an exhaust brake, you will have this light, located above the comfort controls in the center of the instrument panel.

The exhaust brake indicator light will come on and stay on whenever the diesel engine exhaust brake or exhaust restrictor is active. For more information, see “Diesel Engine Exhaust Brake” in the Index.

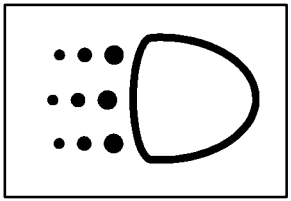
Diff Lock Indicator Light (If Equipped)



This light located in the center of the instrument panel is on when the inter-axle differential lock system is in use.

The light will come on momentarily during starting. If the light fails to come on, have it repaired as soon as possible so you will be aware when the lock system is in use.

Daytime Running Lamps (DRL) Indicator Light

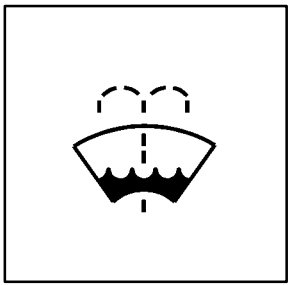


This light is located on the instrument panel cluster. It goes on whenever the Daytime Running Lamps are on.

See “Daytime Running Lamps” in the Index.

When it begins to get dark, the DRL indicator light is a reminder to turn on your headlamps.

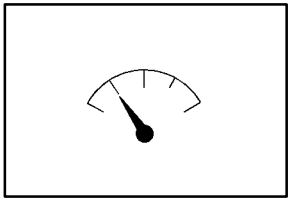
Low Washer Fluid Warning Light



This light will come on when your vehicle is low on windshield washer fluid.

For more information, see “Windshield Washer Fluid” in the Index.

Check Gages Indicator Light



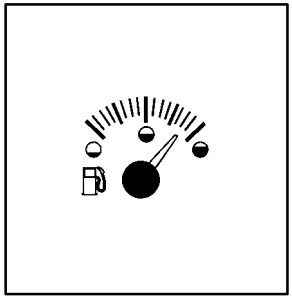
This light will come on as you’re starting the engine, just as a check.

If it ever comes on and stays on while you are driving, however, it means that either your engine coolant temperature gage or your engine oil pressure gage may be showing a reading in the warning zone.

When the check gages light comes on, you will also hear a warning tone. The tone and the light will stay activated until the problem is corrected.

This light may also come on if your vehicle is equipped with the optional automatic engine shutdown system and engine shutdown has begun. See “Engine Automatic Shutdown” in the Index.

Fuel Gage



Your fuel gage is located on the right side of your instrument panel cluster.

When the ignition is on, your fuel gage lets you know about how much fuel you have left. When the gage first shows empty, you'll still have a little fuel left, but you should get more fuel soon.

If your vehicle has dual fuel tanks, the reading on the gage is the total fuel left in both tanks.

Here are four concerns of some operators. None of these shows a problem with your fuel gage:

- The gage moves a little when you turn a corner or speed up.
- The gage doesn't go back to empty when you turn off the ignition.
- At the gas station, the pump shuts off before the gage reads full.
- It takes a little more or less fuel to fill up than the gage indicated.

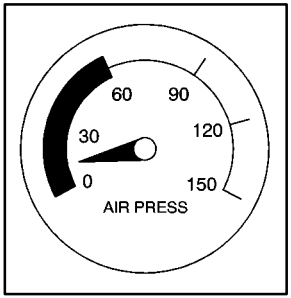
If you have a diesel engine, also see your Caterpillar® Operation & Maintenance Manual.

Water in Fuel Warning Light (If Equipped)

If your vehicle is equipped with a diesel engine, you may have this light

This light will come on to warn you that there is water in the fuel system. For more information on how this light works, see "Diesel Fuel Requirements and Fuel System" in the Index.

Air Pressure Gage (If Equipped)



If your vehicle has air brakes, the air pressure gage is located above the switchbank in the center of the instrument panel.

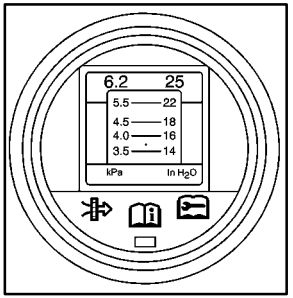
This gage shows the air pressure for both your front and rear brake systems.

If the needle on the gage indicates that the air pressure is below 60 to 75 psi (415 to 517 kPa), the low air warning light will come on. An alarm will also sound if this happens.

The yellow pointer shows the pressure available for the front system, while the green pointer shows pressure for the rear. There should be no more than 4 psi (28 kPa) difference showing between the systems.

Don't drive until both pointers are showing at least 115 psi (793 kPa), so you'll have enough air if you need to apply your brakes.

Air Filter Restriction Indicator (Option)



This optional gage is located above the switchbank in the center of the instrument panel. It monitors the engine air filter.

As the filter gets dirty, the yellow indicator will begin to rise. When it reaches 25 inches of vacuum on the scale, the filter should be replaced.

After replacing the filter, reset the gage by pressing in the yellow reset button at the bottom of the gage.

If you have a diesel engine, also see your Caterpillar® Operation & Maintenance Manual.

Section 3 Comfort Controls and Audio Systems

In this section, you'll find out how to operate the comfort control and audio systems offered with your vehicle. Be sure to read about the particular systems supplied with your vehicle.

3-2 Comfort Controls
3-3 Heater/Air Conditioning Controls (If Equipped)
3-4 Air Conditioning (If Equipped)
3-4 Heating
3-5 Defogging and Defrosting
3-5 Rear Window Defogger (If Equipped)
3-6 Rear Heater (If Equipped)
3-6 Ventilation System
3-7 Audio Systems
3-7 Setting the Time
3-8 AM-FM Radio
3-11 AM-FM Radio with Cassette Tape Player (If Equipped)
3-17 AM-FM Radio with Compact Disc Player (If Equipped)
3-21 Theft-Deterrent Feature
3-21 Understanding Radio Reception
3-22 Tips About Your Audio System
3-23 Care of Your Cassette Tape Player
3-24 Care of Your Compact Discs
3-24 Care of Your Compact Disc Player
3-24 Fixed Mast Antenna
3-24 Chime Level Adjustment

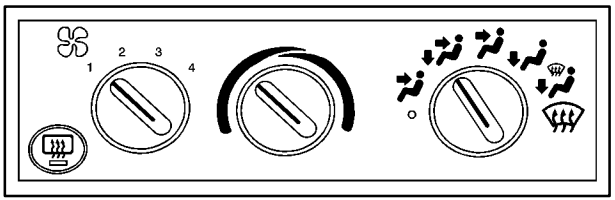
Comfort Controls

This section tells you how to make your air system work for you.

With these systems, you can control the heating, cooling and ventilation in your vehicle.

Heater Controls

If your vehicle does not have air conditioning, the control panel will look like this.



Fan Knob

The knob on the left side of the control panel regulates the fan speed. The knob has four speeds. To increase airflow, turn the knob clockwise. To decrease airflow, turn it counterclockwise. To turn the fan off, turn the mode knob on the far right all the way counterclockwise.

Temperature Knob

The middle knob on the control panel is used to adjust the temperature of the air flowing into the passenger area of your vehicle.

Turn the knob toward the red area for warmer air. Turn the knob toward the blue area for cooler air.

Mode Knob

The knob on the right side of the control panel is used to select the direction of the air flowing into the vehicle.

(Vent): This setting directs air through the instrument panel vents.

(Bi-Level): This setting divides airflow between the floor vents and instrument panel vents.

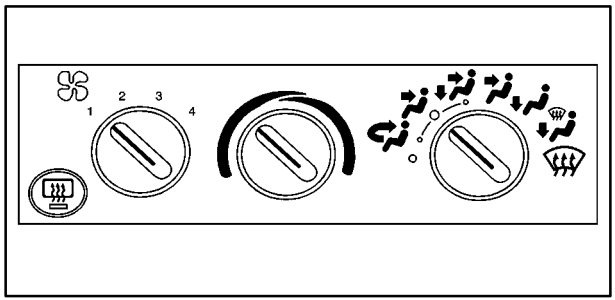
(Floor): This setting directs air through the floor vents.

(Defog): This setting divides airflow between the floor vents and windshield.

(Defrost): This setting directs air through the windshield vents. This setting is used to remove fog or ice from the windshield.

Heater/Air Conditioning Controls (If Equipped)

If your vehicle has air conditioning, the heater/air conditioning control panel will look like this.



Fan Knob

The knob on the left side of the control panel regulates the fan speed. It has four speeds.

To increase airflow, turn the knob clockwise. To decrease airflow, turn it counterclockwise. To turn the fan off, turn the mode knob on the far right all the way counterclockwise.

Temperature Knob

The middle knob on the control panel is used to adjust the temperature of the air flowing into the passenger compartment of your vehicle.

Turn the knob toward the red area for warmer air. Turn the knob toward the blue area for cooler air.

Mode Knob

The knob on the right side of the control panel is used to select the direction of the air flowing into the vehicle.

(Maximum Air Conditioning): Turn the right knob to maximum air conditioning for maximum cooling. This setting puts the system in the recirculation mode and helps to maximize your air conditioner's performance and your vehicle's fuel economy. This setting also cools the air the fastest. After the vehicle's interior reaches a comfortable temperature, turn the knob clockwise to place the air conditioning system in the regular air conditioning mode.

(Air Conditioning): This setting is used for normal cooling on hot days. It cools outside air and directs it through the instrument panel vents.

(Bi-Level Air Conditioning): This setting divides airflow between the floor vents and instrument panel vents. The air conditioning compressor will cycle continuously in this setting as long as the outside air temperature is warm enough to activate the compressor.

(Vent): This setting directs air through the instrument panel vents.

(Floor): This setting directs air through the floor vents.

(Defog): This setting divides airflow between the floor vents and windshield vents.

(Defrost): This setting directs air through the windshield vents. This setting is used to remove fog or ice from the windshield.

Air Conditioning (If Equipped)

Before using the air conditioning, open the windows to clear the vehicle of hot air. This reduces the time it takes for your vehicle to cool down. Then keep your windows closed for the air conditioner to work at its best.

You can use maximum air conditioning with the temperature knob in the blue area when it's really hot outside and you need to cool the inside air quickly. Maximum air conditioning lets in only a little air from the outside.

If you first use maximum air conditioning, you can then use regular air conditioning with the temperature knob in the blue area, as soon as the vehicle has cooled down, so outside air will be going through your vehicle.

While in maximum air conditioning, regular air conditioning, bi-level air conditioning, defog or defrost mode, you may notice a slight increase or decrease in engine speed, due to compressor operation. This is normal because the system is designed to cycle the compressor on and off to maintain the desired temperature.

Heating

On cold days, use floor with the temperature knob in the red area. Outside air will be brought in, heated and distributed through the floor vents. The heater works best if you keep your windows closed while using it.

If you use the optional engine coolant heater before starting your engine, your heating system will produce warmer air faster to heat the passenger compartment in cold weather. See "Engine Coolant Heater" in the Index.

Defogging and Defrosting

Turn the mode knob to defrost to remove fog or ice from the windshield quickly in extremely cold conditions. The temperature knob should be in the red area with the fan knob toward high.

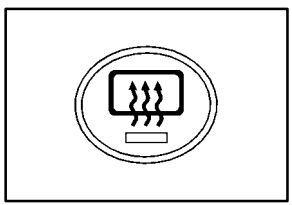
To keep the windshield clear and send heated air through the floor vents, turn the mode knob to defog.

The air conditioning compressor may operate in this setting to dehumidify the air.

Rear Window Defogger (If Equipped)

If you see lines running across the rear windows, you have a rear window defogger. The lines warm the glass.

For best results, clear the windows of as much snow or ice as possible before using the rear window defogger.



To turn on the rear window defogger, press this button located near the fan control. An indicator light in the button will come on when the rear window defogger is working.

The rear window defogger will only work when the ignition is in RUN.

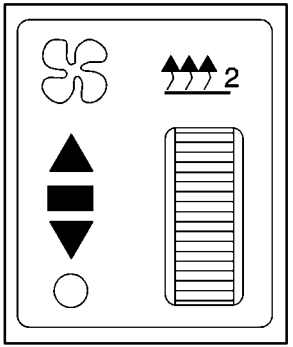
The rear window defogger will turn itself off after several minutes. If you need additional warming time, press the button again. Pressing the button when the indicator light is illuminated will turn the defogger off.

NOTICE:

Don't use a razor blade or something else sharp on the inside of the rear window. If you do, you could cut or damage the warming grid, and the repairs wouldn't be covered by your warranty.

Do not attach a temporary vehicle license, tape or decals across the defogger grid on the rear windows. Use care not to damage the wiring bands that connect the rear window defogger grid when operating the rear swing-out windows (if equipped).

Rear Heater (If Equipped)



If your vehicle has a rear heater, the thumbwheel for this feature is located on the headliner.

To increase and decrease the flow of heated air to the rear floor vents, turn the thumbwheel to the desired fan speed.

To increase the flow of heated air, turn the thumbwheel up. To turn the fan off, turn the thumbwheel down.

Ventilation System

For mild outside temperatures when little heating or cooling is needed, turn the mode knob to vent to direct outside air through your vehicle. Air will flow through the instrument panel vents.

Your vehicle's flow-through ventilation system supplies outside air to the inside of your vehicle when it is moving. With the side windows closed, air will flow into the front air inlet grilles at the base of the windshield, through the vehicle and out the rear air exhaust valve. Outside air will also enter the vehicle when the heater or the air conditioning compressor is running.

Your vehicle has air vents near the center and on the sides of the instrument panel that allow you to adjust the direction and the amount of airflow inside the vehicle.

Move the thumbwheel on the vent up or down to direct the airflow. Increase or reduce the amount of airflow by opening and closing the louvers. The vents can be moved side-to-side to direct the airflow.

When you close a vent, it will increase the flow of air coming out of any vents that are open.

Ventilation Tips

- Keep the hood and front air inlet free of ice, snow, or any other obstruction (such as leaves). The heater and defroster will work far better, reducing the chance of fogging the inside of your windows.
- When you enter a vehicle in cold weather, turn the fan to high for a few moments before driving off. This helps clear the intake ducts of snow and moisture, and reduces the chance of fogging the inside of your windows.
- Keep the air path under the front seats clear of objects. This helps air to circulate throughout your vehicle.

Audio Systems

Your audio system has been designed to operate easily and to give years of listening pleasure. You will get the most enjoyment out of it if you acquaint yourself with it first. Find out what your audio system can do and how to operate all of its controls to be sure you're getting the most out of the advanced engineering that went into it.

Setting the Time

Press and hold the HR or MIN arrow for two seconds. Then press the HR (down) arrow until the correct hour appears on the display. Press and hold the MIN (up) arrow until the correct minute appears on the display. The time may be set with the ignition on or off.

AM-FM Radio

Playing the Radio

PWR (Power): Press this knob to turn the system on and off.

VOL (Volume): Turn the knob to increase or to decrease volume.

RCL (Recall): Press this knob to switch the display between time and radio station frequency. Time display is available with the ignition turned off.

Finding a Station

AM FM: Press this button to switch between AM, FM1 and FM2. The display will show your selection.

TUNE: Turn this knob to tune in radio stations.

◁ **SEEK** ▷**:** Press the right or the left arrow to seek to the next or to the previous station and stay there.

To scan stations, press and hold one of the SEEK arrows for two seconds until you hear a beep. The radio will go to a station, play for a few seconds and flash the station frequency, then go on to the next station. Press one of the SEEK arrows again to stop scanning presets.

To scan preset stations, press and hold one of the SEEK arrows for more than four seconds until you hear two beeps. The radio will go to the first preset station stored on the pushbuttons, play for a few seconds and flash the station frequency, then go on to the next preset station. Press one of the SEEK arrows again to stop scanning presets.

This radio will seek and scan only to stations that are in the selected band and only to those with a strong signal.

Setting Preset Stations

The six numbered pushbuttons let you return to your favorite stations. You can set up to 18 stations (six AM, six FM1 and six FM2) by performing the following steps:

1. Turn the radio on.
2. Press AM FM to select AM, FM1 or FM2.
3. Tune in the desired station.
4. Press and hold one of the six numbered pushbuttons until you hear a beep. Whenever you press that numbered pushbutton, the station you set will return.
5. Repeat the steps for each pushbutton.

Setting the Tone (Bass/Treble)

AUDIO: To adjust bass and treble, press and release AUDIO repeatedly until BAS or TRE appears on the display. Then press and hold the up or the down arrow to increase or to decrease. If a station is weak or noisy, you may want to decrease the treble.

To adjust bass or treble to the middle position, select BAS or TRE. Then press and hold AUDIO for more than two seconds until you hear a beep. B and a zero or T and a zero will appear on the display.

To adjust both tone controls and both speaker controls to the middle position, end out of audio by waiting for the display to change to the time display. Then press and hold AUDIO for more than two seconds until you hear a beep. CEN will appear on the display.

Adjusting the Speakers (Balance/Fade)

AUDIO: To adjust the balance between the right and the left speakers, press and release AUDIO until BAL appears on the display. Then press and hold the up or the down arrow to move the sound toward the right or the left speakers.

To adjust the fade between the front and the rear speakers, press and release AUDIO until FAD appears on the display. Then press and hold the up or the down arrow to move the sound toward the front or the rear speakers.

To adjust balance or fade to the middle position, select BAL or FAD. Then press and hold AUDIO for more than two seconds until you hear a beep. L and a zero or F and a zero will appear on the display.

To adjust both tone controls and both speaker controls to the middle position, end out of audio by waiting for the display to change to the time display. Then press and hold AUDIO for more than two seconds until you hear a beep. CEN will appear on the display.

Fade may not be available if you have a regular cab model.

Radio Messages

CAL (Calibrated): Your audio system has been calibrated for your vehicle from the factory. If CAL appears on the display it means that your radio has not been configured properly for your vehicle and must be returned to the dealership for service.

LOC (Locked): This message is displayed when the Theftlock® system has locked up. Your vehicle must be returned to the dealership for service.

AM FM Radio with Cassette Tape Player (If Equipped)

Playing the Radio

PWR (Power): Press this knob to turn the system on and off.

VOL (Volume): Turn this knob to increase or to decrease volume.

RCL (Recall): Press this knob to switch the display between time and radio station frequency. Time display is available with the ignition turned off.

Finding a Station

AM FM: Press this button to switch between AM, FM1 and FM2. The display will show your selection.

TUNE: Turn this knob to choose radio stations.

◁ **SEEK** ▷**:** Press the right or the left arrow to seek to the next or to the previous station and stay there.

To scan stations, press and hold one of the SEEK arrows for two seconds until you hear a beep. The radio will go to a station, play for a few seconds and flash the station frequency, then go on to the next station. Press one of the SEEK arrows again to stop scanning presets.

To scan preset stations, press and hold one of the SEEK arrows for more than four seconds until you hear two beeps. The radio will go to the first preset station stored on the pushbuttons, play for a few seconds and flash the station frequency, then go on to the next preset station. Press one of the SEEK arrows again to stop scanning presets.

The radio will seek and scan only to stations that are in the selected band and only to those with a strong signal.

Setting Preset Stations

The six numbered pushbuttons let you return to your favorite stations. You can set up to 18 stations (six AM, six FM1 and six FM2) by performing the following steps:

1. Turn the radio on.
2. Press AM FM to select AM, FM1 or FM2.
3. Tune in the desired station.
4. Press and hold one of the six numbered pushbuttons until you hear a beep. Whenever you press that numbered pushbutton, the station you set will return.
5. Repeat the steps for each pushbutton.

Setting the Tone (Bass/Treble)

AUDIO: To adjust bass and treble, press and release AUDIO until BAS or TRE appears on the display. Then press and hold the up or the down arrow to increase or to decrease. If a station is weak or noisy, you may want to decrease the treble.

To adjust bass or treble to the middle position, select BAS or TRE. Then press and hold AUDIO for more than two seconds until you hear a beep. B and a zero or T and a zero will appear on the display.

To adjust both tone controls and both speaker controls to the middle position, end out of audio by waiting for the display to change to the clock display. Then press and hold AUDIO for more than two seconds until you hear a beep. CEN will appear on the display.

Adjusting the Speakers (Balance/Fade)

AUDIO: To adjust the balance between the right and the left speakers, press and release AUDIO until BAL appears on the display. Then press and hold the up or the down arrow to move the sound toward the right or the left speakers.

To adjust the fade between the front and the rear speakers, press and release AUDIO until FAD appears on the display. Then press and hold the up or the down arrow to move the sound toward the front or the rear speakers.

To adjust balance or fade to the middle position, select BAL or FAD. Then press and hold AUDIO for more than two seconds until you hear a beep. L and a zero or F and a zero will appear on the display.

To adjust both tone controls and both speaker controls to the middle position, end out of audio by waiting for the display to change to the time display. Then press and hold AUDIO for more than two seconds until you hear a beep. CEN will appear on the display.

Fade may not be available if you have a regular cab model.

Radio Messages

CAL (Calibration): Your audio system has been calibrated for your vehicle from the factory. If CAL appears on the display it means that your radio has not been configured properly for your vehicle and must be returned to the dealership for service.

LOC (Locked): This message is displayed when the Theftlock® system has locked up. Your vehicle must be returned to the dealership for service.

Playing a Cassette Tape

Your tape player is built to work best with tapes that are up to 30 to 45 minutes long on each side. Tapes longer than that are so thin they may not work well in this player. The longer side with the tape visible should face to the right. If the ignition is on, but the radio is off, the tape can be inserted and will begin playing. If you hear nothing but a garbled sound, the tape may not be in squarely. Press the eject button to remove the tape and start over.

While the tape is playing, use the VOL, AUDIO and SEEK controls just as you do for the radio. The radio will display UP if the top side of the tape is playing. DN (Down) will appear if the bottom side is playing.

If you want to insert a tape while the ignition is off, first press the eject button or the RCL knob.

If an error appears on the display, see “Cassette Tape Messages” later in this section.

1 PREV (Previous): Your tape must have at least three seconds of silence between each selection for previous to work. Press this pushbutton to go to the previous selection on the tape if the current selection has been playing for less than 3 seconds. If pressed when the current selection has been playing from 3 to 13 seconds, it will go to the beginning of the previous selection or the beginning of the current selection, depending on the position on the tape. If pressed when the current selection has been playing for more than 13 seconds, it will go to the beginning of the current selection. Pressing this pushbutton multiple times will increase the number of selections to be searched back, up to -9. Pressing the NEXT pushbutton will cancel the selection(s).

2 NEXT: Your tape must have at least three seconds of silence between each selection for next to work. Press this pushbutton to go to the next selection on the tape. Pressing this pushbutton multiple times in the next mode will increase the number of selections to searched forward. Pressing the PREV pushbutton will cancel the selection(s).

3 REV (Reverse): Press this pushbutton to reverse the tape rapidly. FR will appear on the display. Press it again to return to playing the tape. The radio will play while the tape reverses. You may select stations during reverse operation by using the TUNE or SEEK controls or by using the scan or preset scan features.

4 FWD (Forward): Press this pushbutton to advance quickly to another part of the tape. FF will appear on the display. Press this pushbutton again to return to playing the tape. The radio will play while the tape advances. You may select stations during forward operation by using the TUNE or SEEK controls or by using the scan or preset scan features.

5 SIDE: Press this pushbutton to play the other side of the tape.

6 RPT (Repeat): Your tape must have at least three seconds of silence between each selection for repeat to work. Press this pushbutton once to hear a selection over again. RPT will appear on the display. Press this button again to turn off repeated play. OFF will appear on the display.

◁ **SEEK** ▷**:** The right arrow is the same as the NEXT pushbutton, and the left arrow is the same as the PREV pushbutton. If the arrows are held or pressed more than once, the player will continue moving forward or backward through the tape.

AM FM: Press this button to listen to the radio when a tape is playing. The inactive tape will remain safely inside the radio for future listening.

TAPE: Press this button to play a cassette tape when listening to the radio. CAS will appear on the display.

⏏ **(EJECT):** Press this button to eject a tape. Eject may be activated with the radio off. Cassette tapes may be loaded with the radio and vehicle off if this button is pressed first.

Cassette Tape Messages

ERR (Error): If the player detects a tight or broken tape, this message will appear on the display and the player will eject the tape. The radio will go back to playing the last station selected.

CLN (Clean): If this message appears on the display, the cassette tape player needs to be cleaned. It will still play tapes, but you should clean it as soon as possible to prevent damage to the tapes and player. See “Care of Your Cassette Tape Player” in the Index.

CD Adapter Kits

It is possible to use a portable CD player adapter kit with your cassette tape player after deactivating the tight/loose tape sensor feature on your tape player.

To deactivate this feature, use the following steps:

1. Turn the ignition to RUN or ACCESSORY.
2. Turn the radio off.
3. Press and hold the TAPE button for two seconds until one beep is produced. CAS will flash on the display, showing that the TIGHT/LOOSE TAPE sensor is no longer active.
4. Insert the adapter into the cassette slot.

The override feature will remain active until the eject button is pressed.

AM-FM Radio with Compact Disc Player (If Equipped)

Playing the Radio

PWR (Power): Press this knob to turn the system on and off.

VOL (Volume): Turn this knob to increase or to decrease volume.

RCL (Recall): Press this knob to switch the display between the radio station frequency and the time. Time display is available with the ignition turned off.

Finding a Station

AM FM: Press this button to switch between AM, FM1 and FM2. The display will show your selection.

TUNE: Turn this knob to choose radio stations.

◁ **SEEK** ▷**:** Press the right or the left arrow to seek to the next or to the previous station and stay there.

To scan stations, press and hold one of the SEEK arrows for two seconds until you hear a beep. The radio will go to a station, play for a few seconds and flash the station frequency, then go on to the next station. Press one of the SEEK arrows again to stop scanning presets.

To scan preset stations, press and hold one of the SEEK arrows for more than four seconds until you hear a double beep. The radio will go to the first preset station stored on the pushbuttons, play for a few seconds and flash the station frequency, then go on to the next preset station. Press one of the SEEK arrows again to stop scanning presets.

The radio will seek and scan only to the stations that are in the selected band and only to those with a strong signal.

Setting Preset Stations

The six numbered pushbuttons let you return to your favorite stations. You can set up to 18 stations (six AM, six FM1 and six FM2) by performing the following steps:

1. Turn the radio on.
2. Press AM FM to select AM, FM1 or FM2.
3. Tune in the desired station.
4. Press and hold one of the six numbered pushbuttons until you hear a beep. Whenever you press that numbered pushbutton, the station you set will return.
5. Repeat the steps for each pushbutton.

Setting the Tone (Bass/Treble)

AUDIO: To adjust the bass and treble, press and release AUDIO until BAS or TRE appears on the display. Then press and hold the up or the down arrow to increase or to decrease. If a station is weak or noisy, you may want to decrease the treble.

To adjust bass or treble to the middle position, select BAS or TRE. Then press and hold AUDIO for more than two seconds until you hear a beep. B and a zero or T and a zero will appear on the display.

To adjust both tone controls and both speaker controls to the middle position, end out of audio mode by waiting for the display to change to the time display. Then press and hold AUDIO for more than two seconds until you hear a beep. CEN will appear on the display.

Adjusting the Speakers (Balance/Fade)

AUDIO: To adjust the balance between the right and the left speakers, press and release AUDIO until BAL appears on the display. Then press and hold the up or the down arrow to move the sound toward the right or the left speakers.

To adjust the fade between the front and rear speakers, press and release AUDIO until FAD appears on the display. Then press and hold the up or the down arrow to move the sound toward the front or the rear speakers.

To adjust balance or fade to the middle position, select BAL or FAD. Then press and hold AUDIO for more than two seconds until you hear a beep. L and a zero or F and a zero will appear on the display.

To adjust both tone controls and both speaker controls to the middle position, end out of audio mode by waiting for the display to change to the time display. Then press and hold AUDIO for more than two seconds until you hear a beep. CEN will appear on the display.

Fade may not be available if you have a regular cab model.

Radio Messages

CAL (Calibrated): Your audio system has been calibrated for your vehicle from the factory. If CAL appears on the display it means that your radio has not been configured properly for your vehicle and must be returned to the dealership for service.

LOC (Locked): This message is displayed when the Theftlock® system has locked up. Your vehicle must be returned to the dealership for service.

Playing a Compact Disc

Insert a disc partway into the slot, label side up. The player will pull it in. The disc should begin playing. The display will show CD. If you want to insert a compact disc with the ignition off, first press RCL or the eject button.

If an error appears on the display, see “Compact Disc Messages” later in this section.

1 PREV (Previous): Press this pushbutton to go to the previous track if the current track has been playing for less than eight seconds. If pressed when the current track has been playing for more than eight seconds, it will go to the beginning of the current track. The track number will appear on the display. If you hold this pushbutton or press it more than once, the player will continue moving back through the disc.

2 NEXT: Press this pushbutton to go to the next track. The track number will appear on the display. If you hold this pushbutton or press it more than once, the player will continue moving forward through the disc.

3 REV (Reverse): Press and hold this pushbutton to reverse quickly within a track. Release it to play the passage. The display will show elapsed time while reversing.

4 FWD (Forward): Press and hold this pushbutton to advance quickly within a track. Release it to play the passage. The display will show elapsed time while forwarding.

5 RDM (Random): Press this pushbutton to hear the tracks in random, rather than sequential, order. RND will appear on the display. Press this pushbutton again to turn off random play. OFF will appear on the display.

6 RPT (Repeat): Press this pushbutton once to hear a track over again. RPT will appear on the display. The current track will continue to repeat. Press this pushbutton again to turn off repeated play. OFF will appear on the display.

◁ **SEEK** ▷**:** The right arrow is the same as the NEXT pushbutton, and the left arrow is the same as the PREV pushbutton. If the arrows are held or pressed more than once, the player will continue moving forward or backward through the tracks.

RCL (Recall): Press this button to see the current track number or how long the current track has been playing.

AM FM: Press this button to listen to the radio when a CD is playing. The inactive CD will remain safely inside the radio for future listening.

CD: Press this button to play a compact disc when listening to the radio. CD will appear on the display.

⏏ **(Eject):** Press this button to eject a CD. Eject may be activated with either the ignition or radio off. CDs may be loaded with the radio and ignition off if this button is pressed first.

Compact Disc Messages

If the disc comes out, it could be for one of the following reasons:

- You're driving on a very rough road. When the road becomes smoother, the disc should play.
- It's very hot. When the temperature returns to normal, the disc should play.
- The disc is dirty, scratched, wet or upside down.
- The air is very humid. If so, wait about an hour and try again.

If the CD is not playing correctly, for any of the above reasons, try a known good CD.

If any error occurs repeatedly or if an error can't be corrected, contact your dealer.

Theft-Deterrent Feature

THEFTLOCK® is designed to discourage theft of your radio. The feature works automatically by learning a portion of the Vehicle Identification Number (VIN). If the radio is moved to a different vehicle, it will not operate and LOC will be displayed.

With THEFTLOCK activated, your radio will not operate if stolen.

Understanding Radio Reception

AM

The range for most AM stations is greater than for FM, especially at night. The longer range, however, can cause stations to interfere with each other. AM can pick up noise from things like storms and power lines. Try reducing the treble to reduce this noise if you ever get it.

FM Stereo

FM stereo will give you the best sound, but FM signals will reach only about 10 to 40 miles (16 to 65 km). Tall buildings or hills can interfere with FM signals, causing the sound to come and go.

Tips About Your Audio System

Hearing damage from loud noise is almost undetectable until it is too late. Your hearing can adapt to higher volumes of sound. Sound that seems normal can be loud and harmful to your hearing. Take precautions by adjusting the volume control on your radio to a safe sound level before your hearing adapts to it.

To help avoid hearing loss or damage do the following:

1. Adjust the volume control to the lowest setting.
2. Increase volume slowly until you hear comfortably and clearly.

NOTICE:

Before you add any sound equipment to your vehicle -- like a tape player, CB radio, mobile telephone or two-way radio -- be sure you can add what you want. If you can, it's very important to do it properly. Added sound equipment may interfere with the operation of your vehicle's engine, Delphi Electronics radio or other systems, and even damage them. Your vehicle's systems may interfere with the operation of sound equipment that has been added improperly.

So, before adding sound equipment, check with your dealer and be sure to check federal rules covering mobile radio and telephone units.

Care of Your Cassette Tape Player

A tape player that is not cleaned regularly can cause reduced sound quality, ruined cassettes or a damaged mechanism. Cassette tapes should be stored in their cases away from contaminants, direct sunlight and extreme heat. If they aren't, they may not operate properly or may cause failure of the tape player.

Your tape player should be cleaned regularly after every 50 hours of use. Your radio may display CLN to indicate that you have used your tape player for 50 hours without resetting the tape clean timer. If this message appears on the display, your cassette tape player needs to be cleaned. It will still play tapes, but you should clean it as soon as possible to prevent damage to your tapes and player. If you notice a reduction in sound quality, try a known good cassette to see if the tape or the tape player is at fault. If this other cassette has no improvement in sound quality, clean the tape player.

For best results, use a scrubbing action, non-abrasive cleaning cassette with pads which scrub the tape head as the hubs of the cleaner cassette turn. The recommended cleaning cassette is available through your dealer (GM Part No. 12344789).

The cut tape detection feature of your cassette tape player may identify the cleaning cassette as a damaged tape. To prevent the cleaning cassette from being ejected, use the following steps:

1. Turn the ignition to RUN or ACCESSORY.
2. Turn the radio off.
3. Press and hold the TAPE button for two seconds until the radio produces one beep. CAS will flash on the display for five seconds.
4. Insert the scrubbing action cleaning cassette.
5. Eject the cleaning cassette after the manufacturer's recommended cleaning time.

After the cleaning cassette is ejected, the cut tape detection feature will be active again.

You may also choose a non-scrubbing action, wet-type cleaner which uses a cassette with a fabric belt to clean the tape head. This type of cleaning cassette will not eject on its own. A non-scrubbing action cleaner may not clean as thoroughly as the scrubbing type cleaner. The use of a non-scrubbing action, dry-type cleaning cassette is not recommended.

After you clean the player, press and hold the eject button for three seconds to reset the CLN indicator. The radio will display --- to show the indicator was reset.

Cassettes are subject to wear and the sound quality may degrade over time. Always make sure the cassette tape is in good condition before you have your tape player serviced.

Care of Your Compact Discs

Handle discs carefully. Store them in their original cases or other protective cases and away from direct sunlight and dust. If the surface of a disc is soiled, dampen a clean, soft cloth in a mild, neutral detergent solution and clean it, wiping from the center to the edge.

Be sure never to touch the signal surface when handling discs. Pick up discs by grasping the outer edges or the edge of the hole and the outer edge.

Care of Your Compact Disc Player

The use of CD lens cleaner discs is not advised, due to the risk of contaminating the lens of the CD optics with lubricants internal to the CD mechanism.

Fixed Mast Antenna

The fixed mast antenna can withstand most vehicle washes without being damaged. If the mast should ever become slightly bent, you can straighten it out by hand. If the mast is badly bent, as it might be by vandals, you should replace it.

Check occasionally to be sure the mast is still tightened to the fender. If tightening is required, tighten by hand, then with a wrench one quarter turn.

Chime Level Adjustment

The radio is the vehicle chime producer. The chime is produced from the driver's side front door speakers. To change the volume level, press and hold pushbutton 6 with the ignition on and the radio power off. The chime volume level will change from the normal level to loud, and HI will be displayed on the radio. To change back to the default or normal setting, press and hold pushbutton 6 again. The chime level will change from the loud level to normal, and LO will be displayed. Each time the chime volume is changed, three chimes will sound as an example of the new volume selected. Removing the radio and not replacing it with a factory radio or chime module will disable vehicle chimes.

Section 4 Your Driving and the Road

Here you'll find information about driving on different kinds of roads and in varying weather conditions. We've also included many other useful tips on driving.

4-2 Defensive Driving
4-3 Drunken Driving
4-6 Control of a Vehicle
4-6 Braking
4-10 Traction Control System (TCS) (Option)
4-11 Steering
4-13 Off-Road Recovery
4-13 Passing
4-15 Loss of Control
4-16 Driving at Night
4-18 Driving in Rain and on Wet Roads
4-21 City Driving
4-22 Freeway Driving
4-23 Highway Hypnosis
4-24 Hill and Mountain Roads
4-26 Winter Driving
4-30 Loading Your Vehicle
4-32 Power Take-Off (PTO) Switch (If Equipped)

Defensive Driving

The best advice anyone can give about driving is: Drive defensively.

Please start with a very important safety device in your vehicle: Buckle up. See “Safety Belts” in the Index.

Defensive driving really means “be ready for anything.” On city streets, rural roads or freeways, it means “always expect the unexpected.”

Assume that pedestrians or other drivers are going to be careless and make mistakes. Anticipate what they might do. Be ready for their mistakes.

Rear-end collisions are about the most preventable of accidents. Yet they are common. Allow enough following distance. It’s the best defensive driving maneuver, in both city and rural driving. You never know when the vehicle in front of you is going to brake or turn suddenly.

Defensive driving requires that a driver concentrate on the driving task. Anything that distracts from the driving task -- such as concentrating on a cellular telephone call, reading, or reaching for something on the floor -- makes proper defensive driving more difficult and can even cause a collision, with resulting injury. Ask a passenger to help do things like this, or pull off the road in a safe place to do them yourself. These simple defensive driving techniques could save your life.

Drunken Driving

Death and injury associated with drinking and driving is a national tragedy. It's the number one contributor to the highway death toll, claiming thousands of victims every year.

Alcohol affects four things that anyone needs to drive a vehicle:

- Judgment
- Muscular Coordination
- Vision
- Attentiveness.

Police records show that almost half of all motor vehicle-related deaths involve alcohol. In most cases, these deaths are the result of someone who was drinking and driving. In recent years, about 16,000 annual motor vehicle-related deaths have been associated with the use of alcohol, with more than 300,000 people injured.

Many adults -- by some estimates, nearly half the adult population -- choose never to drink alcohol, so they never drive after drinking. For persons under 21, it's against the law in every U.S. state to drink alcohol. There are good medical, psychological and developmental reasons for these laws.

The obvious way to solve the leading highway safety problem is for people never to drink alcohol and then drive. But what if people do? How much is "too much" if the driver plans to drive? It's a lot less than many might think. Although it depends on each person and situation, here is some general information on the problem.

The Blood Alcohol Concentration (BAC) of someone who is drinking depends upon four things:

- The amount of alcohol consumed
- The drinker's body weight
- The amount of food that is consumed before and during drinking
- The length of time it has taken the drinker to consume the alcohol.

According to the American Medical Association, a 180-lb. (82 kg) person who drinks three 12-ounce (355 ml) bottles of beer in an hour will end up with a BAC of about 0.06 percent. The person would reach the same BAC by drinking three 4-ounce (120 ml) glasses of wine or three mixed drinks if each had 1-1/2 ounces (45 ml) of a liquor like whiskey, gin or vodka.

It's the amount of alcohol that counts. For example, if the same person drank three double martinis (3 ounces or 90 ml of liquor each) within an hour, the person's BAC would be close to 0.12 percent. A person who consumes food just before or during drinking will have a somewhat lower BAC level.

There is a gender difference, too. Women generally have a lower relative percentage of body water than men. Since alcohol is carried in body water, this means that a woman generally will reach a higher BAC level than a man of her same body weight when each has the same number of drinks.

The law in an increasing number of U.S. states, and throughout Canada, sets the legal limit at 0.08 percent. In some other countries, the limit is even lower. For example, it is 0.05 percent in both France and Germany. The BAC limit for all commercial drivers in the United States is 0.04 percent.

The BAC will be over 0.10 percent after three to six drinks (in one hour). Of course, as we've seen, it depends on how much alcohol is in the drinks, and how quickly the person drinks them.

But the ability to drive is affected well below a BAC of 0.10 percent. Research shows that the driving skills of many people are impaired at a BAC approaching 0.05 percent, and that the effects are worse at night. All drivers are impaired at BAC levels above 0.05 percent. Statistics show that the chance of being in a collision increases sharply for drivers who have a BAC of 0.05 percent or above. A driver with a BAC level of 0.06 percent has doubled his or her chance of having a collision. At a BAC level of 0.10 percent, the chance of this driver having a collision is 12 times greater; at a level of 0.15 percent, the chance is 25 times greater!

The body takes about an hour to rid itself of the alcohol in one drink. No amount of coffee or number of cold showers will speed that up. “I’ll be careful” isn’t the right answer. What if there’s an emergency, a need to take sudden action, as when a child darts into the street? A person with even a moderate BAC might not be able to react quickly enough to avoid the collision.

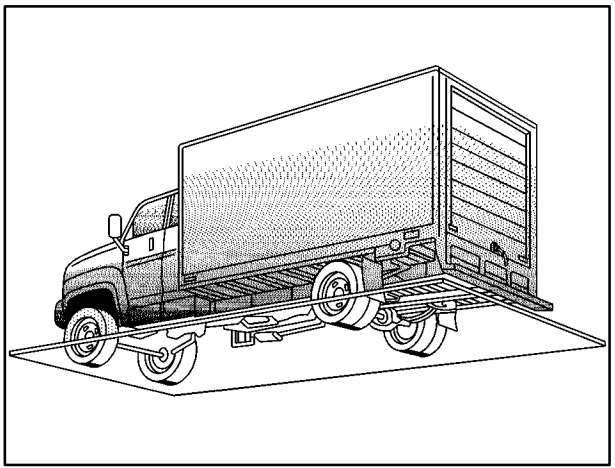
There’s something else about drinking and driving that many people don’t know. Medical research shows that alcohol in a person’s system can make crash injuries worse, especially injuries to the brain, spinal cord or heart. This means that when anyone who has been drinking -- driver or passenger -- is in a crash, that person’s chance of being killed or permanently disabled is higher than if the person had not been drinking.

⚠ CAUTION:

Drinking and then driving is very dangerous. Your reflexes, perceptions, attentiveness and judgment can be affected by even a small amount of alcohol. You can have a serious -- or even fatal -- collision if you drive after drinking. Please don’t drink and drive or ride with a driver who has been drinking. Ride home in a cab; or if you’re with a group, designate a driver who will not drink.

Control of a Vehicle

You have three systems that make your vehicle go where you want it to go. They are the brakes, the steering and the accelerator. All three systems have to do their work at the places where the tires meet the road.



Sometimes, as when you're driving on snow or ice, it's easy to ask more of those control systems than the tires and road can provide. That means you can lose control of your vehicle.

Braking

Braking action involves *perception time* and *reaction time.*

First, you have to decide to push on the brake pedal. That's *perception time.* Then you have to bring up your foot and do it. That's *reaction time.*

Average *reaction time* is about 3/4 of a second. But that's only an average. It might be less with one driver and as long as two or three seconds or more with another. Age, physical condition, alertness, coordination and eyesight all play a part. So do alcohol, drugs and frustration. But even in 3/4 of a second, a vehicle moving at 60 mph (100 km/h) travels 66 feet (20 m). That could be a lot of distance in an emergency, so keeping enough space between your vehicle and others is important.

And, of course, actual stopping distances vary greatly with the surface of the road (whether it's pavement or gravel); the condition of the road (wet, dry, icy); tire tread; the condition of your brakes; the weight of the vehicle and the amount of brake force applied.

Avoid needless heavy braking. Some people drive in spurts -- heavy acceleration followed by heavy braking -- rather than keeping pace with traffic. This is a mistake. Your brakes may not have time to cool between hard stops. Your brakes will wear out much faster if you do a lot of heavy braking. If you keep pace with the traffic and allow realistic following distances, you will eliminate a lot of unnecessary braking. That means better braking and longer brake life.

If your engine ever stops while you're driving, brake normally but don't pump your brakes. If you do, the pedal may get harder to push down. If your engine stops, you will still have some power brake assist. But you will use it when you brake. Once the power assist is used up, it may take longer to stop and the brake pedal will be harder to push.

Hydraulic Brake Systems

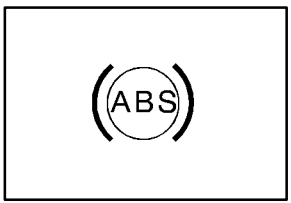
If your engine stops running, or if your primary brake system stops working, your vehicle has a reserve power assist system to help you slow down. Just slowly and steadily apply the brake pedal until you can safely get off the road. The pedal will seem harder to push down. Don't pump the pedal; the system won't work well or at all that way.

You may find that the steering wheel seems hard to turn when you're turning and braking at the same time. Also, the PRIMARY BRAKE warning light may come on and the warning tone may sound. This is normal because the main hydraulic brake system and power steering both use the power steering pump. If this ever happens, let up on the brake pedal a little. When you let up on the brake pedal in that situation, it lets the steering get a little more help from the pump.

Anti-Lock Brake System (ABS)

Your vehicle has anti-lock brakes. ABS is an advanced electronic braking system that will help prevent a braking skid.

When you start your engine and begin to drive away, your anti-lock brake system will check itself. You may hear a momentary motor or clicking noise while this test is going on. This is normal.



If there's a problem with the anti-lock brake system, this warning light will stay on. See "Anti-Lock Brake System Warning Light" in the Index.

Let's say the road is wet and you're driving safely. Suddenly, an animal jumps out in front of you. You slam on the brakes and continue braking. Here's what happens with ABS:

A computer senses that wheels are slowing down. If one of the wheels is about to stop rolling, the computer will separately work the brakes at each wheel.

The anti-lock system can change the brake pressure faster than any driver could. The computer is programmed to make the most of available tire and road conditions. This can help you steer around the obstacle while braking hard.

As you brake, your computer keeps receiving updates on wheel speed and controls braking pressure accordingly.

Remember: Anti-lock doesn't change the time you need to get your foot up to the brake pedal or always decrease stopping distance. If you get too close to the vehicle in front of you, you won't have time to apply your brakes if that vehicle suddenly slows or stops. Always leave enough room up ahead to stop, even though you have anti-lock brakes.

Using Anti-Lock

Don't pump the brakes. Just hold the brake pedal down firmly and let anti-lock work for you. You may feel the brakes pulsate, or you may hear air exhausting, but this is normal.

Braking in Emergencies

With anti-lock, you can steer and brake at the same time. In many emergencies, steering can help you more than even the very best braking.

Traction Control System (TCS) (Option)

Your vehicle may have a traction control system that limits wheel spin. This is especially useful in slippery road conditions. The system operates only if it senses that one or both of the rear wheels are spinning or beginning to lose traction. When this happens, the system applies the brake(s) at the affected wheel(s).

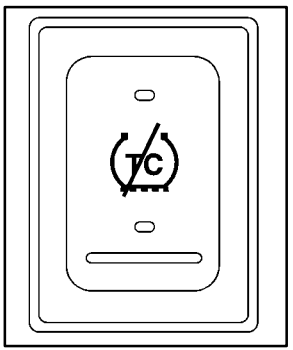
The bottom light on the TCS on/off button will come on when the TCS is limiting wheel spin. You may feel or hear the system working, but this is normal. The TCS will function at speeds up to about 25 mph (42 km/h).

The TCS may operate on dry roads under some conditions. When this happens, you may notice a reduction in acceleration. This is normal and doesn't mean there's a problem with your vehicle. Examples of these conditions include a hard acceleration in a turn, an abrupt upshift or downshift of the transmission or driving on rough roads.

When the light in the top of the TCS button is on, the TCS is off and will not limit wheel spin. Adjust your driving accordingly.

The light in the top of the TCS button will come on if the TCS is turned off by pressing the TCS on/off button. The light may also come on if a problem has been detected in either the traction control system or the anti-lock brake system.

The traction control system automatically comes on whenever you start your vehicle. To limit wheel spin, especially in slippery road conditions, you should always leave the system on. But you can turn the traction control system off if you ever need to. You should turn the system off if your vehicle ever gets stuck in sand, mud or snow and rocking the vehicle is required. See "Rocking Your Vehicle" in the Index.



To turn the system on or off, press the traction control button located in the instrument panel switchbank.

If you used the TCS button to turn the system off, the light in the top of the button will come on and stay on. You can turn the TCS back on at any time by pressing the button again; the light should go off.

Steering

Power Steering

If you lose power steering assist because the engine stops or the system is not functioning, you can steer but it will take much more effort.

On vehicles with hydraulic brakes, the power steering and main hydraulic brake system both use the power steering pump. See “Hydraulic Brake Systems” in the Index.

Steering Tips

Driving on Curves

It’s important to take curves at a reasonable speed.

A lot of the “driver lost control” accidents mentioned on the news happen on curves. Here’s why:

Experienced driver or beginner, each of us is subject to the same laws of physics when driving on curves. The traction of the tires against the road surface makes it possible for the vehicle to change its path when you turn the front wheels. If there’s no traction, inertia will keep the vehicle going in the same direction. If you’ve ever tried to steer a vehicle on wet ice, you’ll understand this.

The traction you can get in a curve depends on the condition of your tires and the road surface, the angle at which the curve is banked, and your speed. While you’re in a curve, speed is the one factor you can control.

Suppose you’re steering through a sharp curve. Then you suddenly accelerate. Both control systems -- steering and acceleration -- have to do their work where the tires meet the road. Adding the sudden acceleration can demand too much of those places. You can lose control. Refer to “Traction Control System” in the Index.

What should you do if this ever happens? Ease up on the brake or accelerator pedal, steer the vehicle the way you want it to go, and slow down.

Speed limit signs near curves warn that you should adjust your speed. Of course, the posted speeds are based on good weather and road conditions. Under less favorable conditions you’ll want to go slower.

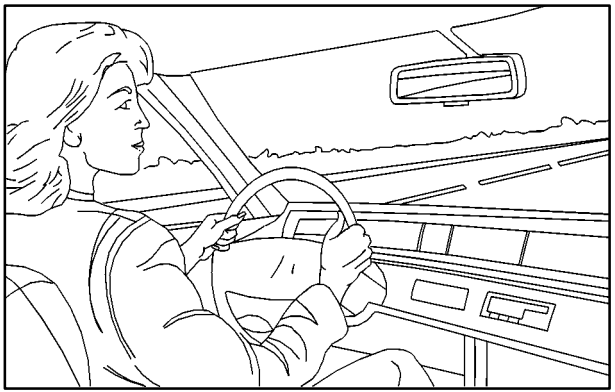
If you need to reduce your speed as you approach a curve, do it before you enter the curve, while your front wheels are straight ahead.

This is especially important with a tractor-trailer. Try to adjust your speed so you can “drive” through the curve. Maintain a reasonable, steady speed. Wait to accelerate until you are out of the curve, and then accelerate gently into the straightaway.

Steering in Emergencies

There are times when steering can be more effective than braking. For example, you come over a hill and find a truck stopped in your lane, or a car suddenly pulls out from nowhere, or a child darts out from between parked cars and stops right in front of you. You can avoid these problems by braking -- if you can stop in time. But sometimes you can't; there isn't room. That's the time for evasive action -- steering around the problem.

In emergencies like these, first apply your brakes. See "Braking in Emergencies" earlier in this section. It is better to remove as much speed as you can from a possible collision. Then steer around the problem, to the left or right depending on the space available. Since your vehicle has anti-lock brakes, you don't need to release the brakes to maintain steering control.

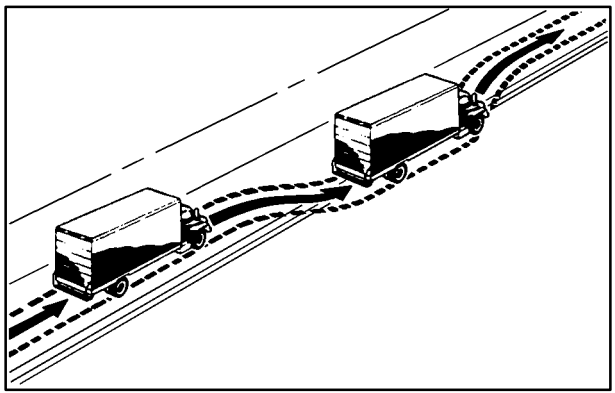


An emergency like this requires close attention and a quick decision. If you are holding the steering wheel at the recommended 9 and 3 o'clock positions, you may be able to turn it just enough to miss the object without removing either hand. But you must act fast, steering precisely. The more sharply you turn, the greater the chance of a skid, a rollover or a "jackknife" with a tractor-trailer. Just as quickly straighten the wheel once you have avoided the object.

The fact that such emergency situations are always possible is a good reason to practice defensive driving at all times and wear safety belts properly.

Off-Road Recovery

You may find that your right wheels have dropped off the edge of a road onto the shoulder while you're driving.



If the level of the shoulder is only slightly below the pavement, recovery should be fairly easy. Ease off the accelerator and then, if there is nothing in the way, steer so that your vehicle straddles the edge of the pavement. You can turn the steering wheel up to one-quarter turn until the right front tire contacts the pavement edge. Then turn your steering wheel to go straight down the roadway.

Passing

The driver of a vehicle about to pass another on a two-lane highway waits for just the right moment, accelerates, moves around the vehicle ahead, then goes back into the right lane again. A simple maneuver?

Not necessarily! Passing another vehicle on a two-lane highway is a potentially dangerous move, since the passing vehicle occupies the same lane as oncoming traffic for several seconds. A miscalculation, an error in judgment, or a brief surrender to frustration or anger can suddenly put the passing driver face to face with the worst of all traffic accidents -- the head-on collision.

So here are some tips for passing:

- A vehicle like yours takes a longer time to reach passing speed, so you'll need a longer stretch of clear road ahead than you would with a passenger car.
- "Drive ahead." Look down the road, to the sides and to crossroads for situations that might affect your passing patterns. If you have any doubt whatsoever about making a successful pass, wait for a better time.

- Watch for traffic signs, pavement markings and lines. If you can see a sign up ahead that might indicate a turn or an intersection, delay your pass. A broken center line usually indicates it's all right to pass (providing the road ahead is clear). Never cross a solid line on your side of the lane or a double solid line, even if the road seems empty of approaching traffic.
- Do not get too close to the vehicle you want to pass while you're awaiting an opportunity. For one thing, following too closely reduces your area of vision, especially if you're following a larger vehicle. Also, you won't have adequate space if the vehicle ahead suddenly slows or stops. Keep back a reasonable distance.
- When it looks like a chance to pass is coming up, start to accelerate but stay in the right lane and don't get too close. Time your move so you will be increasing speed as the time comes to move into the other lane. If the way is clear to pass, you will have a "running start" that more than makes up for the distance you would lose by dropping back. And if something happens to cause you to cancel your pass, you need only slow down and drop back again and wait for another opportunity.
- If other cars are lined up to pass a slow vehicle, wait your turn. But take care that someone isn't trying to pass you as you pull out to pass the slow vehicle.
- Check your mirrors and start your left lane change signal before moving out of the right lane to pass. When you are far enough ahead of the passed vehicle to see its front in your right outside mirror, activate your right lane change signal and move back into the right lane. (Remember that if your right outside mirror is convex, the vehicle you just passed may seem to be farther away from you than it really is.)
- Try not to pass more than one vehicle at a time on two-lane roads. Reconsider before passing the next vehicle.
- Don't overtake a slowly moving vehicle too rapidly. Even though the brake lamps are not flashing, it may be slowing down or starting to turn.
- If you're being passed, make it easy for the following driver to get ahead of you. Perhaps you can ease a little to the right.

Loss of Control

Let's review what driving experts say about what happens when the three control systems (brakes, steering and acceleration) don't have enough friction where the tires meet the road to do what the driver has asked.

In any emergency, don't give up. Keep trying to steer and constantly seek an escape route or area of less danger.

Skidding

In a skid, a driver can lose control of the vehicle. Defensive drivers avoid most skids by taking reasonable care suited to existing conditions, and by not "overdriving" those conditions. But skids are always possible.

The three types of skids correspond to your vehicle's three control systems. In the braking skid, your wheels aren't rolling. In the steering or cornering skid, too much speed or steering in a curve causes tires to slip and lose cornering force. And in the acceleration skid, too much throttle causes the driving wheels to spin.

A cornering skid is best handled by easing your foot off the accelerator pedal. If you have the "Traction Control System," remember: It helps avoid only the acceleration skid. If you do not have this system, or if the system is off, then an acceleration skid is also best handled by easing your foot off the accelerator pedal.

Of course, traction is reduced when water, snow, ice, gravel or other material is on the road. For safety, you'll want to slow down and adjust your driving to these conditions. It is important to slow down on slippery surfaces because stopping distance will be longer and vehicle control more limited.

While driving on a surface with reduced traction, try your best to avoid sudden steering, acceleration or braking (including engine braking by shifting to a lower gear). See "Diesel Engine Exhaust Brake" in the Index for information about using the exhaust brake on slippery surfaces. Any sudden changes could cause the tires to slide. You may not realize the surface is slippery until your vehicle is skidding. Learn to recognize warning clues -- such as enough water, ice or packed snow on the road to make a "mirrored surface" -- and slow down when you have any doubt.

Driving at Night

Night driving is more dangerous than day driving. One reason is that some drivers are likely to be impaired -- by alcohol or drugs, with night vision problems, or by fatigue.

Here are some tips on night driving.

- Drive defensively.
- Don't drink and drive.
- Since you can't see as well, you may need to slow down and keep more space between you and other vehicles.
- Slow down, especially on higher speed roads. Your headlamps can light up only so much road ahead.
- In remote areas, watch for animals.
- If you're tired, pull off the road in a safe place and rest.

No one can see as well at night as in the daytime. But as we get older these differences increase. A 50-year-old driver may require at least twice as much light to see the same thing at night as a 20-year-old.

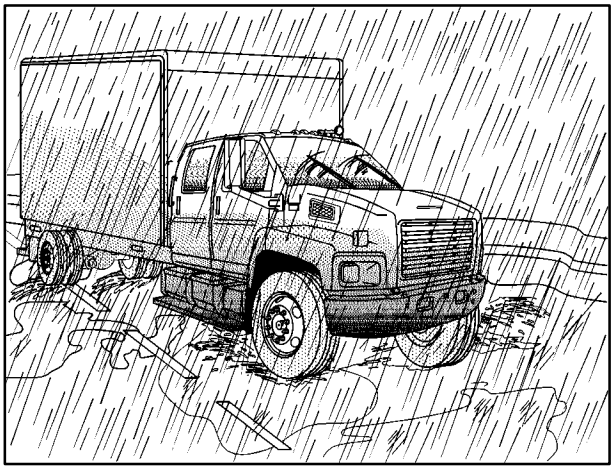
What you do in the daytime can also affect your night vision. For example, if you spend the day in bright sunshine you are wise to wear sunglasses. Your eyes will have less trouble adjusting to night. But if you're driving, don't wear sunglasses at night. They may cut down on glare from headlamps, but they also make a lot of things invisible.

You can be temporarily blinded by approaching headlamps. It can take a second or two, or even several seconds, for your eyes to readjust to the dark. When you are faced with severe glare (as from a driver who doesn't lower the high beams, or a vehicle with misaimed headlamps), slow down a little. Avoid staring directly into the approaching headlamps.

Keep your windshield and all the glass on your vehicle clean -- inside and out. Glare at night is made much worse by dirt on the glass. Even the inside of the glass can build up a film caused by dust. Dirty glass makes lights dazzle and flash more than clean glass would, making the pupils of your eyes contract repeatedly.

Remember that your headlamps light up far less of a roadway when you are in a turn or curve. Keep your eyes moving; that way, it's easier to pick out dimly lighted objects. Just as your headlamps should be checked regularly for proper aim, so should your eyes be examined regularly. Some drivers suffer from night blindness -- the inability to see in dim light -- and aren't even aware of it.

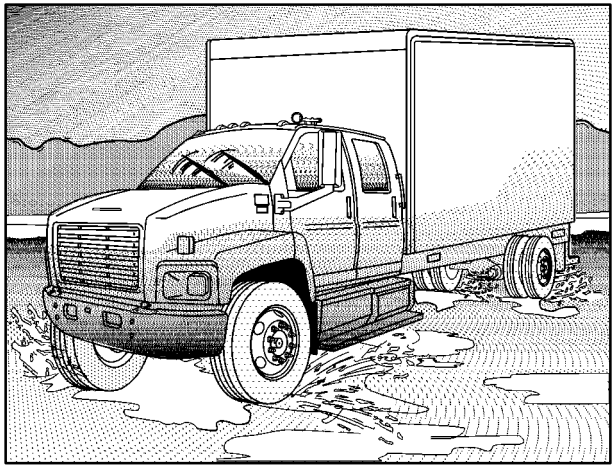
Driving in Rain and on Wet Roads



Rain and wet roads can mean driving trouble. On a wet road, you can't stop, accelerate or turn as well because your tire-to-road traction isn't as good as on dry roads. And, if your tires don't have much tread left, you'll get even less traction. It's always wise to go slower and be cautious if rain starts to fall while you are driving. The surface may get wet suddenly when your reflexes are tuned for driving on dry pavement.

The heavier the rain, the harder it is to see. Even if your windshield wiper blades are in good shape, a heavy rain can make it harder to see road signs and traffic signals, pavement markings, the edge of the road and even people walking.

It's wise to keep your wiping equipment in good shape and keep your windshield washer tank filled with washer fluid. Replace your windshield wiper inserts when they show signs of streaking or missing areas on the windshield, or when strips of rubber start to separate from the inserts.



Driving too fast through large water puddles or even going through some vehicle washes can cause problems, too. The water may affect your brakes. Try to avoid puddles. But if you can't, try to slow down before you hit them.

⚠ CAUTION:

Wet brakes can cause accidents. They won't work as well in a quick stop and may cause pulling to one side. You could lose control of the vehicle.

After driving through a large puddle of water or a vehicle wash, apply your brake pedal lightly until your brakes work normally.

Hydroplaning

Hydroplaning is dangerous. So much water can build up under your tires that they can actually ride on the water. This can happen if the road is wet enough and you're going fast enough. When your vehicle is hydroplaning, it has little or no contact with the road.

Hydroplaning doesn't happen often. But it can if your tires do not have much tread or if the pressure in one or more is low. It can happen if a lot of water is standing on the road. If you can see reflections from trees, telephone poles or other vehicles, and raindrops "dimple" the water's surface, there could be hydroplaning.

Hydroplaning usually happens at higher speeds. There just isn't a hard and fast rule about hydroplaning. The best advice is to slow down when it is raining.

Driving Through Deep Standing Water

NOTICE:

If you drive too quickly through deep puddles or standing water, water can come in through your engine's air intake and badly damage your engine. Never drive through water that is slightly lower than the underbody of your vehicle. If you can't avoid deep puddles or standing water, drive through them very slowly.

Driving Through Flowing Water

⚠ CAUTION:

Flowing or rushing water creates strong forces. If you try to drive through flowing water, as you might at a low water crossing, your vehicle can be

CAUTION: (Continued)

CAUTION: (Continued)

carried away. As little as six inches of flowing water can carry away a smaller vehicle. If this happens, you and the other vehicle occupants could drown. Don't ignore police warning signs, and otherwise be very cautious about trying to drive through flowing water.

Some Other Rainy Weather Tips

- Turn on your low-beam headlamps and your marker and clearance lamps, if your vehicle has them -- not just your parking lamps -- to help make you more visible to others.
- Besides slowing down, allow some extra following distance. And be especially careful when you pass another vehicle. Allow yourself more clear room ahead, and be prepared to have your view restricted by road spray.
- Have good tires with proper tread depth. See "Tires" in the Index.

City Driving

One of the biggest problems with city streets is the amount of traffic on them. You'll want to watch out for what the other drivers are doing and pay attention to traffic signals.

Here are ways to increase your safety in city driving:

- Know the best way to get to where you are going. Get a city map and plan your trip into an unknown part of the city just as you would for a cross-country trip.
- Larger vehicles can't be driven everywhere smaller ones can. There are low underpasses, truck routes and other special situations. Usually these are well marked, so be sure to watch for the signs.
- Try to use the freeways that rim and crisscross most large cities. You'll save time and energy. See the next part, "Freeway Driving."
- Treat a green light as a warning signal. A traffic light is there because the corner is busy enough to need it. When a light turns green, and just before you start to move, check both ways for vehicles that have not cleared the intersection or may be running the red light.

Freeway Driving

Mile for mile, freeways (also called thruways, parkways, expressways, turnpikes or superhighways) are the safest of all roads. But they have their own special rules.

The most important advice on freeway driving is: Keep up with traffic and keep to the right. Drive at the same speed most of the other drivers are driving. Too-fast or too-slow driving breaks a smooth traffic flow. Treat the left lane on a freeway as a passing lane.

At the entrance, there is usually a ramp that leads to the freeway. If you have a clear view of the freeway as you drive along the entrance ramp, you should begin to check traffic. Try to determine where you expect to blend with the flow. Try to merge into the gap at close to the prevailing speed. Switch on your turn signal, check your mirrors and try to blend smoothly with the traffic flow.

Once you are on the freeway, adjust your speed to the posted limit or to the prevailing rate if it's slower. Stay in the right lane unless you want to pass. On some freeways, larger vehicles aren't allowed to use some lanes. These places usually are well-marked.

Before changing lanes, check your mirrors. Then use your turn signal.

Once you are moving on the freeway, make certain you allow a reasonable following distance. Expect to move slightly slower at night.

When you want to leave the freeway, move to the proper lane well in advance. If you miss your exit, do not, under any circumstances, stop and back up. Drive on to the next exit.

The exit ramp can be curved, sometimes quite sharply.

The exit speed for cars -- but not larger vehicles -- is usually posted. You should go more slowly.

Reduce your speed according to your speedometer, not to your sense of motion. After driving for any distance at higher speeds, you may tend to think you are going slower than you actually are.

Highway Hypnosis

Is there actually such a condition as “highway hypnosis”? Or is it just plain falling asleep at the wheel? Call it highway hypnosis, lack of awareness, or whatever.

When you drive the vehicle for a long distance, there is something about an easy stretch of road with the same scenery, along with the hum of the tires on the road, the drone of the engine, and the rush of the wind against the vehicle that can make you sleepy. Don’t let it happen to you! If it does, your vehicle can leave the road in *less than a second*, and you could crash and be injured.

What can you do about highway hypnosis? First, be aware that it can happen.

Then here are some tips:

- Make sure your vehicle is well ventilated, with a comfortably cool interior.
- Keep your eyes moving. Scan the road ahead and to the sides. Check your mirrors and your instruments frequently.
- If you get sleepy, pull off the road into a rest, service or parking area and take a nap, get some exercise, or both. For safety, treat drowsiness on the highway as an emergency.

Hill and Mountain Roads

Driving on steep hills or mountains is different from driving in flat or rolling terrain.

Here are some tips that can make your drive through steep country safer:

- Keep the vehicle in good shape. Check all fluid levels and also the brakes, tires, cooling system and transmission. These parts can work hard on mountain roads.
- Know how to go down hills. The most important thing to know is this: let your engine do some of the slowing down. Shift to a lower gear when you go down a steep or long hill.

⚠ CAUTION:

If you don't shift down, your brakes could get so hot that they wouldn't work well. You would then have poor braking or even none going down a hill. You could crash. Shift down to let your engine assist your brakes on a steep downhill slope.

⚠ CAUTION:

Coasting downhill in NEUTRAL (N) or with the ignition off is dangerous. Your brakes will have to do all the work of slowing down. They could get so hot that they wouldn't work well. You would then have poor braking or even none going down a hill. You could crash. Always have your engine running and your vehicle in gear when you go downhill.

- Know how to go uphill. Use lower gears. They help cool your engine and transmission, and you can climb the hill better.
- Stay in your own lane when driving on two-lane roads in hills or mountains. Don't swing wide or cut across the center of the road. Drive at speeds that let you stay in your own lane.
- As you go over the top of a hill, be alert. There could be something in your lane, like a stalled car or an accident.
- You may see highway signs on mountains that warn of special problems. Examples are long grades, passing or no-passing zones, a falling rocks area, winding roads and special truck lanes. Be alert to these and take appropriate action.

Winter Driving

Here are some tips for winter driving:

- Be sure the vehicle is in good shape for winter.
- You may want to put winter emergency supplies in your vehicle.

Include an ice scraper, a small brush or broom, a supply of windshield washer fluid, a rag, some winter outer clothing, a small shovel, a flashlight, a red cloth and reflective warning triangles. And, if you will be driving under severe conditions, include a small bag of sand, a piece of old carpet or a couple of burlap bags to help provide traction. Be sure you properly secure these items in your vehicle.

Driving on Snow or Ice

Most of the time, those places where your tires meet the road probably have good traction.

However, if there is snow or ice between your tires and the road, you can have a very slippery situation. You'll have a lot less traction or "grip" and will need to be very careful.

What's the worst time for this? "Wet ice." Very cold snow or ice can be slick and hard to drive on. But wet ice can be even more trouble because it may offer the least traction of all. You can get wet ice when it's about freezing (32°F; 0°C) and freezing rain begins to fall. Try to avoid driving on wet ice until salt and sand crews can get there.

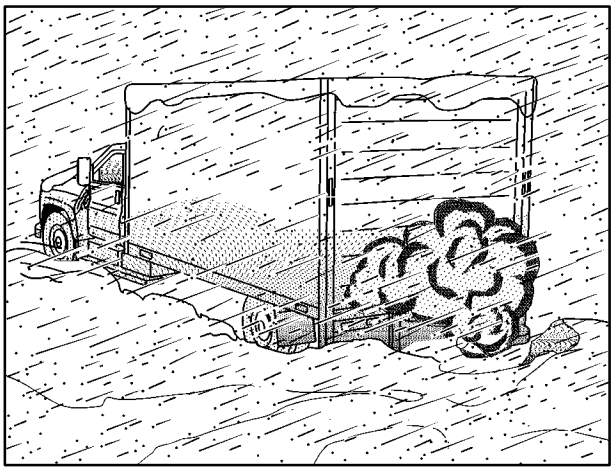
Whatever the condition -- smooth ice, packed, blowing or loose snow -- drive with caution.

If you have traction control, keep the system on. It will improve your ability to accelerate when driving on a slippery road. But you can turn the traction system off if you ever need to. You should turn the system off if your vehicle ever gets stuck in sand, mud, ice or snow. See "Rocking Your Vehicle" in the Index. Even though your vehicle has a traction system, you'll want to slow down and adjust your driving to the road conditions. See "Traction Control System" in the Index.

If you don't have a traction system, accelerate gently. Try not to break the gentle traction. If you accelerate too fast, the drive wheels will spin and polish the surface under the tires even more.

- Whatever your braking system, allow greater following distance on any slippery road.
- Watch for slippery spots. The road might be fine until you hit a spot that's covered with ice. On an otherwise clear road, ice patches may appear in shaded areas where the sun can't reach: around clumps of trees, behind buildings or under bridges. Sometimes the surface of a curve or an overpass may remain icy when the surrounding roads are clear. If you see a patch of ice ahead of you, brake before you are on it. Try not to brake while you're actually on the ice, and avoid sudden steering maneuvers.

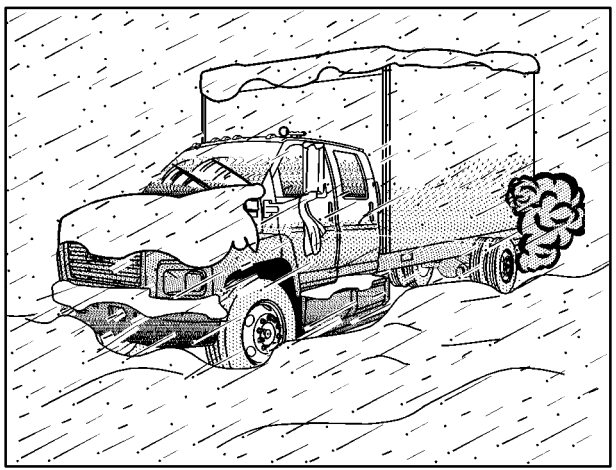
If You're Caught in a Blizzard



If you are stopped by heavy snow, you could be in a serious situation. You should probably stay with your vehicle unless you know for sure that you are near help and you can hike through the snow. Here are some things to do to summon help and keep yourself and your passengers safe:

- Turn on your hazard flashers.

- Tie a red cloth to your mirror arm to alert police that you've been stopped by the snow.
- Put on extra clothing or wrap a blanket around you. If you have no blankets or extra clothing, make body insulators from newspapers, burlap bags, rags, floor mats -- anything you can wrap around yourself or tuck under your clothing to keep warm.



You can run the engine to keep warm, but be careful.

⚠ CAUTION:

Snow can trap exhaust gases under your vehicle. This can cause deadly CO (carbon monoxide) gas to get inside. CO could overcome you and kill you. You can't see it or smell it, so you might not know it is in your vehicle. Clear away snow from around the base of your vehicle if any is blocking your exhaust pipe. And check around again from time to time to be sure snow doesn't collect there.

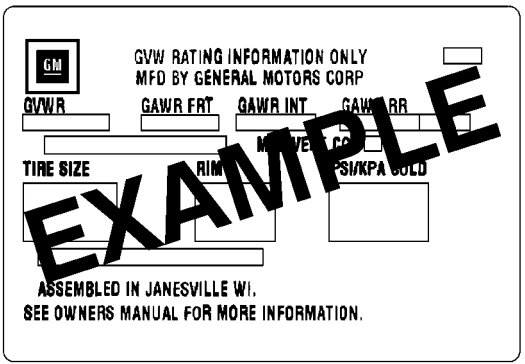
Open a window just a little on the side of the vehicle that's away from the wind. This will help keep CO out.

Run your engine only as long as you must. This saves fuel. When you run the engine, make it go a little faster than just idle. That is, push the accelerator slightly. This uses less fuel for the heat that you get and it keeps the battery (or batteries) charged. You will need a well-charged battery (or batteries) to restart the vehicle, and possibly for signaling later on with your headlamps. Let the heater run for a while.

If you have a diesel engine, you may have to run it at a higher speed to get enough heat. Then, shut the engine off and close the window almost all the way to preserve the heat. Start the engine again and repeat this only when you feel really uncomfortable from the cold. But do it as little as possible. Preserve the fuel as long as you can. To help keep warm, you can get out of the vehicle and do some fairly vigorous exercises every half hour or so until help comes.

Loading Your Vehicle

There is a GVW Rating label on your vehicle that shows how much weight it may properly carry. It also shows the size of your original tires and the inflation pressures needed to obtain the gross weight capacity of your vehicle. This is called the Gross Vehicle Weight Rating (GVWR).



The GVWR includes the weight of the vehicle, all occupants, fuel and cargo.

The GVW Rating label is provided by the final manufacturer and should be on the door or door jamb. It also tells you the maximum weights for the front and rear axles, called Gross Axle Weight Rating (GAWR). To find out the actual loads on your front and rear axles, you need to go to a weigh station and weigh your vehicle. Your dealer can help you with this. Be sure to spread out your load equally on both sides of the center line.

Never exceed the GVWR for your vehicle, or the GAWR for either the front or rear axle.

And, if you do have a heavy load, you should spread it out.

⚠ CAUTION:

Do not load your vehicle any heavier than the GVWR, or either the maximum front or rear GAWR. If you do, parts on your vehicle can break, and it can change the way your vehicle handles. These could cause you to lose control and crash. Also, overloading can shorten the life of your vehicle.

Using heavier suspension components to get added durability might not change your weight ratings. Ask your dealer to help you load your vehicle the right way.

NOTICE:

Your warranty does not cover parts or components that fail because of overloading.

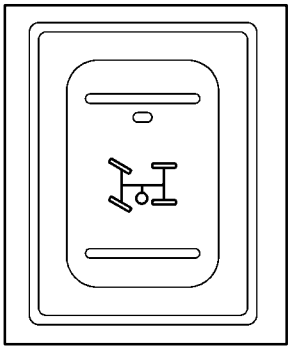
If you put things inside your vehicle -- like suitcases, tools, packages or anything else -- they will go as fast as the vehicle goes. If you have to stop or turn quickly, or if there is a crash, they'll keep going.

⚠ CAUTION:

Things you put inside your vehicle can strike and injure people in a sudden stop or turn, or in a crash.

- **Put things in the cargo area of your vehicle. Try to spread the weight evenly.**
- **Never stack heavier things, like suitcases, inside the vehicle so that some of them are above the tops of the seats.**
- **Don't leave an unsecured child restraint in your vehicle.**
- **When you carry something inside the vehicle, secure it whenever you can.**
- **Don't leave a seat folded down unless you need to.**

Power Take-Off (PTO) Switch (If Equipped)



If your vehicle is equipped for the addition of a PTO, this factory installed switch will be located in the instrument panel switchbank.

Before using a PTO, refer to the manufacturer's or installer's instructions.

Section 5 Problems on the Road

Here you'll find what to do about some problems that can occur on the road.

5-2 Hazard Warning Flashers
5-3 Other Warning Devices
5-3 Jump Starting
5-10 Towing Your Vehicle
5-17 Engine Overheating
5-20 Cooling System
5-26 Engine Fan Noise
5-26 If a Tire Goes Flat
5-27 Changing a Flat Tire
5-28 If You're Stuck: In Sand, Mud, Ice or Snow

Hazard Warning Flashers

Your hazard warning flashers let you warn others. They also let police know you have a problem. Your front and rear turn signal lamps will flash on and off.

Your hazard warning flashers button is located on top of the steering column.

Your hazard warning flashers work no matter what position your key is in, and even if the key isn't in.

Press the button to make the front and rear turn signal lamps flash on and off. Press the button again to turn the flashers off.

When the hazard warning flashers are on, your turn signals won't work. The hazard warning flashers will not flash if the brakes are applied.

Other Warning Devices

If you carry reflective triangles, you can set one up at the side of the road behind your vehicle in the recommended manner per Federal Motor Carrier Safety Regulation (FMCSR) Section 392.22, to warn others.

Jump Starting

If your battery (or batteries) has run down, you may want to use another vehicle and some jumper cables to start your vehicle. Be sure to follow the steps below to do it safely.

⚠ CAUTION:

Batteries can hurt you. They can be dangerous because:

- **They contain acid that can burn you.**
- **They contain gas that can explode or ignite.**
- **They contain enough electricity to burn you.**

If you don't follow these steps exactly, some or all of these things can hurt you.

NOTICE:

Ignoring these steps could result in costly damage to your vehicle that wouldn't be covered by your warranty.

The ACDelco® battery in your vehicle has a built-in hydrometer. Do not charge, test or jump start the battery if the hydrometer looks clear or light yellow. Replace the battery when there is a clear or light yellow hydrometer and a cranking complaint.

Trying to start your vehicle by pushing or pulling it won't work, and it could damage your vehicle.

1. Check the other vehicle. It must have a 12-volt battery (or batteries) with a negative ground system.

NOTICE:

If the other system isn't a 12-volt system with a negative ground, both vehicles can be damaged.

If you have a diesel engine vehicle with two batteries (or more), you should know before you begin that, especially in cold weather, you may not be able to get enough power from a single battery in another vehicle to start your diesel engine.

If your vehicle has more than one battery, use the one closest to the starter -- this will reduce electrical resistance.

2. Get the vehicles close enough so the jumper cables can reach, but be sure the vehicles aren't touching each other. If they are, it could cause a ground connection you don't want. You wouldn't be able to start your vehicle, and the bad grounding could damage the electrical systems.

   To avoid the possibility of the vehicles rolling, set the parking brake firmly on both vehicles involved in the jump start procedure. Put an automatic transmission in PARK (P) or a manual transmission in neutral before setting the parking brake.

NOTICE:

If you leave your radio on, it could be badly damaged. The repairs wouldn't be covered by your warranty.

3. Turn off the ignition on both vehicles. Unplug unnecessary accessories plugged into the cigarette lighter or accessory power outlets. Turn off the radio and all lamps that aren't needed. This will avoid sparks and help save both batteries, and it could save your radio!

4. Open the hood of the other vehicle and locate the battery. Find the positive (+) and negative (-) terminals on that battery.

Open the hood of your vehicle and find the remote positive (+) terminal, located under a red plastic cover on the passenger's side of the vehicle.

Squeeze the tab and open the case to access the remote positive (+) terminal.

You will not see the battery (or batteries) of your vehicle under the hood. They are located in the battery box on the passenger's side of the vehicle.

You will not need to access your battery (or batteries) for jump starting. The remote positive (+) terminal is for that purpose.

⚠ CAUTION:

Using a match near a battery can cause battery gas to explode. People have been hurt doing this, and some have been blinded. Use a flashlight if you need more light.

Be sure the batteries have enough water. You don't need to add water to the ACDelco® battery (or batteries) installed in your new vehicle. But if a battery has filler caps, be sure the right amount of fluid is there. If it is low, add water to take care of that first. If you don't, explosive gas could be present.

Battery fluid contains acid that can burn you. Don't get it on you. If you accidentally get it in your eyes or on your skin, flush the place with water and get medical help immediately.

⚠ CAUTION:

Fans or other moving engine parts can injure you badly. Keep your hands away from moving parts once the engine is running.

5. Check that the jumper cables don't have loose or missing insulation. If they do, you could get a shock. The vehicles could be damaged, too.

   Before you connect the cables, here are some basic things you should know. Positive (+) will go to positive (+) or to a remote positive (+) terminal if the vehicle has one. Negative (-) will go to a heavy, unpainted metal engine part or to a remote negative (-) terminal if the vehicle has one.

   Don't connect the positive (+) to negative (-) or you'll get a short that would damage the battery and maybe other parts too. And don't connect the negative (-) cable to the negative (-) terminal on the dead battery because this can cause sparks.

6. Connect the red positive (+) cable to the positive (+) terminal of the dead battery. Use a remote positive (+) terminal if the vehicle has one.

7. Don’t let the other end touch metal. Connect it to the positive (+) terminal of the good battery. Use a remote positive (+) terminal if the vehicle has one.

8. Now connect the black negative (-) cable to the negative (-) terminal of the good battery. Use a remote negative (-) terminal if the vehicle has one.

Don’t let the other end touch anything until the next step. The other end of the negative (-) cable doesn’t go to the dead battery. It goes to a heavy, unpainted metal engine part or to the remote negative (-) terminal on the vehicle with the dead battery.

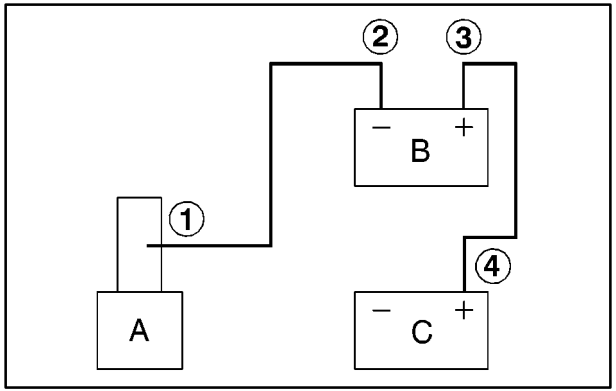
9. Connect the other end of the negative (-) cable at least 18 inches (45 cm) away from the dead battery, but not near engine parts that move. The electrical connection is just as good there, and the chance of sparks getting back to the battery is much less.

10. Now start the vehicle with the good battery and run the engine for one or two minutes. If your vehicle has the high idle option, use it.

11. Try to start the vehicle with the dead battery. If it won't start after a few tries, it probably needs service.

NOTICE:

Damage to your vehicle may result from electrical shorting if jumper cables are removed incorrectly. To prevent electrical shorting, take care that they don't touch each other or any other metal. The repairs wouldn't be covered by your warranty.



Jumper Cable Removal

A. Heavy, Unpainted Metal Engine Part or Remote Negative (-) Terminal

B. Good Battery or Remote Positive (+) and Remote Negative (-) Terminals

C. Dead Battery or Remote Positive (+) Terminal

To disconnect the jumper cables from both vehicles, do the following:

1. Disconnect the black negative (-) cable from the vehicle that had the dead battery.
2. Disconnect the black negative (-) cable from the vehicle with the good battery.
3. Disconnect the red positive (+) cable from the vehicle with the good battery.
4. Disconnect the red positive (+) cable from the other vehicle.
5. Return the positive (+) remote terminal cover to its original position.

⚠ CAUTION:

To help avoid serious personal injury to you or others:

- **Never let passengers ride in a vehicle that is being towed.**
- **Never tow faster than safe or posted speeds.**
- **Never tow with damaged parts not fully secured.**
- **Never get under your vehicle after it has been lifted by the tow truck.**
- **Always secure the vehicle on each side with separate safety chains when towing it.**
- **Working on air brakes without first using the release studs to compress the springs can lead to injury. Never work on the air brakes chambers without first using the release studs to compress the brake springs.**

CAUTION: (Continued)

CAUTION: (Continued)

- **When the brake springs are manually compressed, you will have no brakes. Release your air-operated parking brakes manually only to tow the vehicle. Never drive the vehicle with the brakes released.**

Consult your dealer or a professional towing service if you need to have your vehicle towed. They can provide the right equipment and know-how to tow it without damage. See “Roadside Assistance” in the Index.

Before you do anything, turn on the hazard warning flashers (if they have not been damaged).

When you call, tell the towing service:

- That your vehicle has rear-wheel drive.
- The make, model and year of your vehicle.
- Whether you can still move the shift lever.
- If there was an accident, what was damaged.

When the towing service arrives, let the tow operator know that this manual contains towing instructions. The operator may want to see them.

Here are specific towing instructions:

Towing Your Vehicle From the Front (Front Wheels Off the Ground)

Before Towing

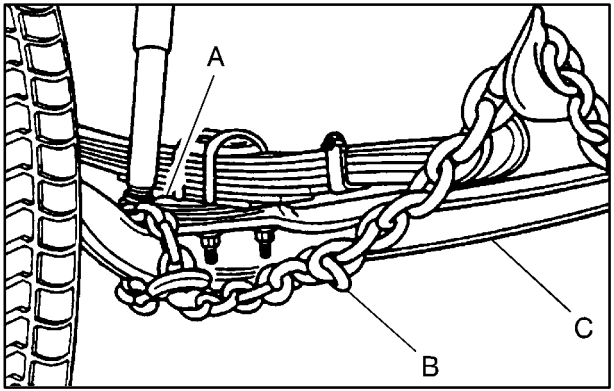
Block the rear wheels of the disabled vehicle. On vehicles with air brakes, release the emergency brake system by compressing the brake chamber springs as outlined in this section. (This is to prevent the possibility of the emergency brake being applied during towing.)

On vehicles with hydraulic brakes, release the parking brake fully by moving the lever to the fully-released position.

Disconnect the propshaft at the rear axle (forward axle on tandem axle models). Secure the propshaft to the frame or crossmember.

Towing the Vehicle with the Front Bumper Removed

1. Remove the front bumper.
2. Connect and lock the lift chains to the front axle, outside of the spring anchor plates as shown.

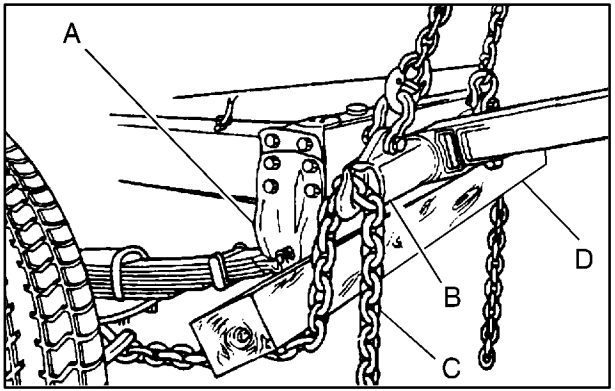


A. Spring Anchor Plate

B. Lift Chain

C. Front Axle

3. Place a 6” x 6” x 5’ hardwood beam underneath and slightly behind the front spring shackle brackets.
4. Connect the lift chains to the tow bar and raise the tow bar until lift chain slack has been taken up and the hardwood beam is fully seated against the spring shackle brackets as shown.



A. Shackle Bracket

B. Tow Bar

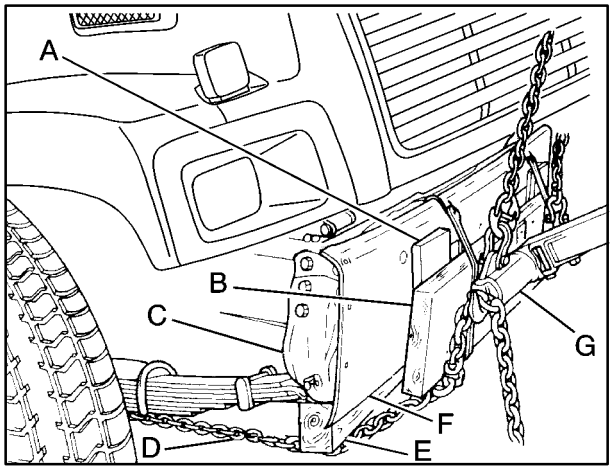
C. Lift Chain

D. Hardwood Beam

5. Raise the vehicle to the required height.

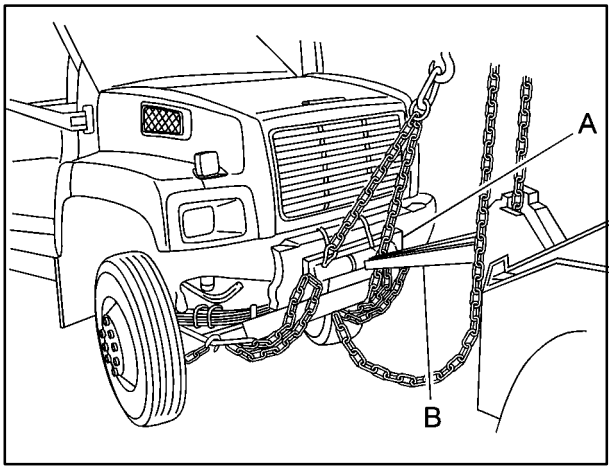
Towing the Vehicle with the Front Bumper Installed

1. Connect and lock the lift chains to the front axle, outside of the spring anchor plates as previously shown.
2. Place a 6” x 6” x 5’ hardwood beam underneath and slightly behind the front spring shackle brackets as previously shown.
3. Connect the lift chains to the tow bar and take up the slack in the chains until the tow bar is within 4” of the front bumper facing. Place a 2” x 12” x 40” hardwood board with rubber pads against the front bumper and secure as shown.



A. Rubber Pad
B. Hardwood Board
C. Shackle Bracket
D. Lift Chain
E. Hardwood Beam
F. Bumper
G. Tow Bar

4. Remove the remaining slack in the lift chains. The tow bar swing arm should rest against the 2” x 12” x 40” hardwood board as shown.



A. Hardwood Board
B. Swing Arm

5. Raise the vehicle to the required height.

Single Drive Rear Axle

Disconnect the propshaft at the rear axle. Secure the propshaft to the frame or crossmember.

Tandem Drive Rear Axles (Forward Axle Off the Ground)

Raise the front of the vehicle until the forward tandem axle wheels are off the ground. Remove the rearward propshaft.

Tandem Drive Rear Axle (Both Axles on the Ground Due to Type of Suspension or Attached Load)

Disconnect the propshaft at the forward tandem axle. Secure the propshaft to the frame or crossmember.

If there is damage or suspected damage to the axle(s), remove all axle shafts. Cover the hub openings to prevent the loss of lubricant or entry of dirt or foreign objects.

After Towing

1. Block the rear wheels and install axle and propshafts.
2. Check for proper phasing of universal joints.
3. Apply the emergency brake system before disconnecting from the towing vehicle.

Towing Your Vehicle From the Front (All Wheels On the Ground)

Your vehicle may be towed on all wheels provided the steering is working. Remember that the power brakes and power steering will not have power assist. Vehicles with air brakes will not have brakes. There must be a tow bar installed between the towing vehicle and the disabled vehicle.

Before Towing

Block the wheels of the disabled vehicle. On vehicles with air brakes, release the emergency brake system by compressing the brake chamber springs as outlined in this section. (This is to prevent the possibility of the emergency brake being applied during towing.)

On vehicles with hydraulic brakes, release the parking brake fully by moving the lever to the fully-released position.

Disconnect the propshaft at the rear axle (forward axle on tandem axle models). Secure the propshaft to the frame or crossmember.

If there is damage or suspected damage to the axle(s), remove the axle shafts. Cover the hub openings to prevent the loss of lubricant or entry of dirt or foreign objects.

After Towing

1. Block the rear wheels and install axle and propshafts.
2. Check for proper phasing of universal joints.
3. Apply the parking brake system before disconnecting from the towing vehicle.
4. Check and fill with oil as required.

Towing Your Vehicle From the Rear

Before Towing

Secure the steering wheel to maintain a straight-ahead position. Make certain that the front axle is not loaded above the front axle Gross Axle Weight Rating (GAWR) as indicated on the vehicle's Gross Vehicle Weight Rating (GVWR) label. See "Gross Vehicle Weight Rating (GVWR)" in the index for more information.

After Towing

Block the rear wheels and release the steering. Apply the parking brake system before disconnecting from the towing vehicle.

Refer to the transmission shift label for additional information.

Releasing Air-Operated Parking Brakes (If Equipped)

If your vehicle has air brakes, you could have a special towing problem. If your vehicle has to be towed because of a complete loss of air pressure from both systems, the parking brakes will have automatically engaged. The tow operator can release the brakes manually by using the following steps. Then your vehicle can be towed with all wheels or only the rear wheels on the ground.

1. Block the wheels of the vehicle.

2. Remove the release stud and nut from the side of the brake chamber. Some chambers have studs which are visible at all times.

3. Remove the rubber cap from the rear of the chamber.

4. Put the release stud, nut and flat washer into the chamber.

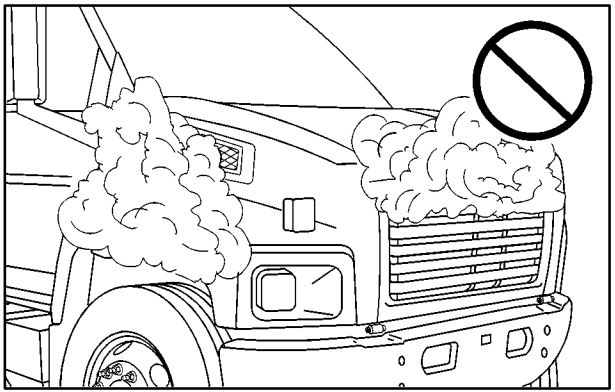
5. Turn the stud clockwise a quarter of a turn.

6. Turn the stud nut clockwise several turns to release the brakes. Follow the same procedure to release the other brake.
7. At the repair facility, apply air pressure of at least 70 psi (480 kPa) to the brake chambers, either from an external air supply or the vehicle's air system.
8. Turn the stud nut counterclockwise several turns. Remove the stud from the chamber.
9. Replace the stud and washer and tighten the nut into the side of the chamber.
10. Replace the rubber cap.

Engine Overheating

You will find a coolant temperature warning gage on your vehicle's instrument panel, as well as a low coolant warning light. Your vehicle also has a check gages warning light on the instrument panel.

If Steam Is Coming From Your Engine



⚠ CAUTION:

Steam from an overheated engine can burn you badly, even if you just open the hood. Stay away from the engine if you see or hear steam coming from it. Just turn it off and get everyone away from the vehicle until it cools down. Wait until there is no sign of steam or coolant before you open the hood.

If you keep driving when your engine is overheated, the liquids in it can catch fire. You or others could be badly burned. Stop your engine if it overheats, and get out of the vehicle until the engine is cool.

NOTICE:

If your engine catches fire because you keep driving with no coolant, your vehicle can be badly damaged. The costly repairs would not be covered by your warranty.

If No Steam Is Coming From Your Engine

An overheat warning, along with a low coolant light, can indicate a serious problem. See “Low Coolant Light” in the Index.

If you get an engine overheat warning with no low coolant light, but see or hear no steam, the problem may not be too serious. Sometimes the engine can get a little too hot when you:

- Climb a long hill on a hot day.
- Stop after high-speed driving.
- Idle for long periods in traffic.

If you get the overheat warning with no sign of steam, try this for a minute or so:

1. In heavy traffic, let the engine idle in neutral while stopped. If it is safe to do so, pull off the road, shift to park or neutral and let the engine idle.
2. Turn on your heater to full hot at the highest fan speed and open the window as necessary.
3. If climbing a hill, downshift to raise engine and fan speeds.

If you no longer have the overheat warning, you can drive. Just to be safe, drive slower for about 10 minutes. If the warning doesn’t come back on, you can drive normally.

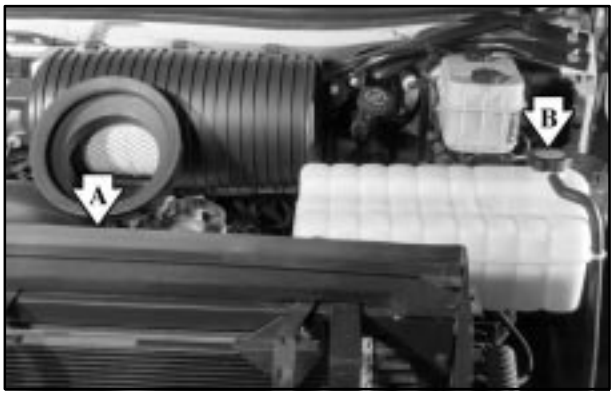
If the warning continues and you have not stopped, pull over, stop, and park your vehicle right away.

If there’s still no sign of steam, you can push down the accelerator until the engine speed is about twice as fast as normal idle speed for at least three minutes while you’re parked. If you still have the warning, *turn off the engine and get everyone out of the vehicle* until it cools down.

You may decide not to lift the hood but to get service help right away.

Cooling System

When you decide it's safe to lift the hood, here's what you'll see:

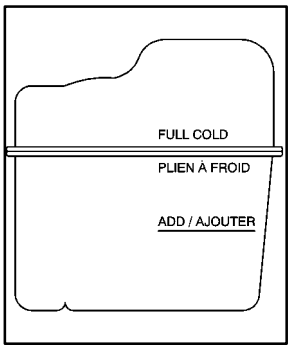


A. Engine Fan

B. Coolant Surge Tank

If your vehicle has a Caterpillar diesel engine, see the Caterpillar® Diesel Engine Operation and Maintenance Manual provided with your vehicle.

If the coolant inside the coolant surge tank is boiling, don't do anything else until it cools down. The vehicle should be parked on a level surface.



The coolant level should be at COLD FILL or higher. If it isn't, you may have a leak at the pressure cap or in the radiator hoses, heater hoses, radiator, water pump or somewhere else in the cooling system.

⚠ CAUTION:

Heater and radiator hoses, and other engine parts, can be very hot. Don't touch them. If you do, you can be burned.

Don't run the engine if there is a leak. If you run the engine, it could lose all coolant. That could cause an engine fire, and you could be burned. Get any leak fixed before you drive the vehicle.

If there seems to be no leak, start the engine again. The engine cooling fan speed should increase when idle speed is doubled by pushing the accelerator pedal down. If it doesn't, your vehicle needs service. Turn off the engine.

NOTICE:

Engine damage from running your engine without coolant isn't covered by your warranty.

NOTICE:

When adding coolant, it is important that you use only DEX-COOL® (silicate-free) coolant.

If coolant other than DEX-COOL is added to the system, premature engine, heater core or radiator corrosion may result. In addition, the engine coolant will require change sooner -- at 30,000 miles (50 000 km) or 24 months, whichever occurs first. Damage caused by the use of coolant other than DEX-COOL® is not covered by your new vehicle warranty.

How to Add Coolant to the Coolant Surge Tank

If you haven't found a problem yet, check to see if coolant is visible in the surge tank. If coolant is visible but the coolant level isn't at COLD FILL or higher, add a 50/50 mixture of *clean, drinkable water* and DEX-COOL® coolant at the coolant surge tank, but be sure the cooling system, including the coolant surge tank pressure cap, is cool before you do it. See "Engine Coolant" in the Index for more information.

If no coolant is visible in the surge tank, add coolant as follows:

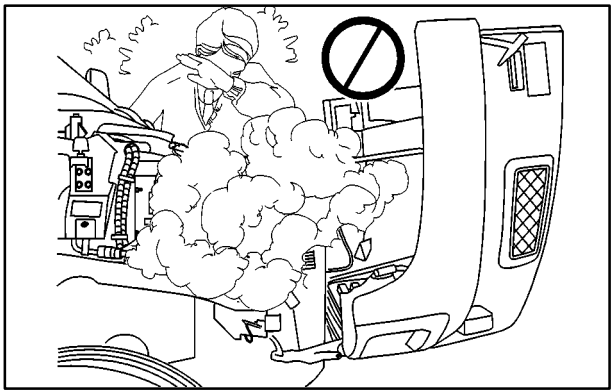
⚠ CAUTION:

Steam and scalding liquids from a hot cooling system can blow out and burn you badly. They are under pressure, and if you turn the coolant surge tank pressure cap -- even a little -- they can come out at high speed.

CAUTION: (Continued)

CAUTION: (Continued)

Never turn the cap when the cooling system, including the coolant surge tank pressure cap, is hot. Wait for the cooling system and coolant surge tank pressure cap to cool if you ever have to turn the pressure cap.



⚠ CAUTION:

Adding only plain water to your cooling system can be dangerous. Plain water, or some other liquid such as alcohol, can boil before the proper coolant mixture will. Your vehicle's coolant warning system is set for the proper coolant mixture. With plain water or the wrong mixture, your engine could get too hot but you wouldn't get the overheat warning. Your engine could catch fire and you or others could be burned. Use a 50/50 mixture of clean, drinkable water and DEX-COOL® coolant.

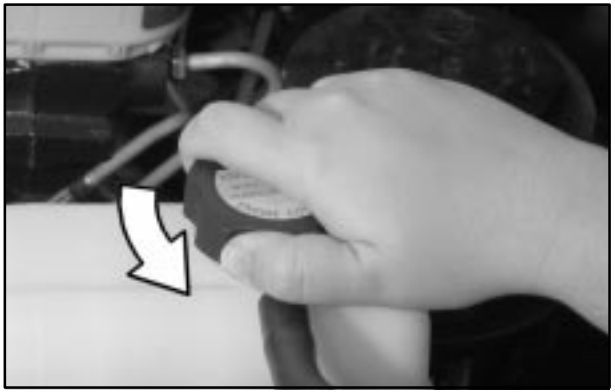
NOTICE:

In cold weather, water can freeze and crack the engine, radiator, heater core and other parts. Use the recommended coolant and the proper coolant mixture.

⚠ CAUTION:

You can be burned if you spill coolant on hot engine parts. Coolant contains ethylene glycol and it will burn if the engine parts are hot enough. Don't spill coolant on a hot engine.

1. Park the vehicle on a level surface. You can remove the coolant surge tank pressure cap when the cooling system, including the coolant surge tank pressure cap and upper radiator hose, is no longer hot. Turn the pressure cap slowly counterclockwise (left) about one full turn. If you hear a hiss, wait for that to stop. A hiss means there is still some pressure left.



2. Then keep turning the pressure cap slowly, and remove it.

3. Then fill the coolant surge tank with the proper mixture, to the FULL mark.

4. With the coolant surge tank pressure cap off, start the engine and let it run until you can feel the upper radiator hose getting hot. Watch out for the engine cooling fan.

   By this time, the coolant level inside the coolant surge tank may be lower. If the level is lower, add more of the proper mixture to the coolant surge tank until the level reaches slightly above the FULL mark.

5. Then replace the pressure cap. Be sure the pressure cap is hand-tight and fully seated.

Engine Fan Noise

Your vehicle has a clutched engine cooling fan. When the clutch is engaged, the fan spins faster to provide more air to cool the engine. In most everyday driving conditions, the clutch is not fully engaged. This improves fuel economy and reduces fan noise. Under heavy vehicle loading, trailer towing and/or high outside temperatures, the fan speed increases when the clutch engages. So you may hear an increase in fan noise. This is normal and should not be mistaken as the transmission slipping or making extra shifts. It is merely the cooling system functioning properly. The fan will slow down when additional cooling is not required and the clutch disengages.

You may also hear this fan noise when you start the engine. It will go away as the fan clutch disengages.

If a Tire Goes Flat

It's unusual for a tire to "blow out" while you're driving, especially if you maintain your tires properly. If air goes out of a tire, it's much more likely to leak out slowly. But if you should ever have a "blowout," here are a few tips about what to expect and what to do:

If a front tire fails, the flat tire will create a drag that pulls the vehicle toward that side. Take your foot off the accelerator pedal and grip the steering wheel firmly. Steer to maintain lane position, and then gently brake to a stop well out of the traffic lane.

A rear blowout, particularly on a curve, acts much like a skid and may require the same correction you'd use in a skid. In any rear blowout, remove your foot from the accelerator pedal. Get the vehicle under control by steering the way you want the vehicle to go. It may be very bumpy and noisy, but you can still steer. Gently brake to a stop -- well off the road if possible.

If a tire goes flat, avoid further tire and wheel damage by driving slowly to a level place and turn on your hazard warning flashers. The next part tells you what to do.

Changing a Flat Tire

Your truck, when new, did not include tire changing equipment or a place to store a tire in the vehicle. Few drivers of these vehicles have the necessary equipment aboard to be able to change a flat tire safely. For example, you would need a truck jack that can lift several thousand pounds and a torque wrench that can generate several hundred foot-pounds (Newton-meters) of twisting force.

⚠ CAUTION:

If you try to put air back into a tire that has run flat, or even a tire that was quite low on air, the tire can have a sudden air-out. This could cause you to lose control of the vehicle and have a serious crash. Don't refill a flat or very low tire with air without first having the tire taken off the wheel and checked for damage.

So if you're stopped somewhere by a flat or damaged tire or wheel, you should get expert help. See "Roadside Assistance" in the Index.

⚠ CAUTION:

Your vehicle, when new, did not include tire changing equipment or a place to store a tire in the vehicle. Special tools and procedures are required if a tire needs to be serviced. If these tools and procedures aren't used, you or others could be injured or killed while trying to change or service a truck tire.

If You're Stuck: In Sand, Mud, Ice or Snow

In order to free your vehicle when it is stuck, you will need to spin the wheels, but you don't want to spin your wheels too fast. The method known as "rocking" can help you get out when you're stuck, but you must use caution.

⚠ CAUTION:

If you let your tires spin at high speed, they can explode, and you or others could be injured. And, the transmission or other parts of the vehicle can overheat. That could cause an engine compartment fire or other damage. When you're stuck, spin the wheels as little as possible. Don't spin the wheels above 35 mph (55 km/h) as shown on the speedometer.

NOTICE:

Spinning your wheels can destroy parts of your vehicle as well as the tires. If you spin the wheels too fast while shifting your transmission back and forth, you can destroy your transmission.

Rocking Your Vehicle To Get It Out

First, turn your steering wheel left and right. That will clear the area around your front wheels. If your vehicle has traction control, you should turn your traction control system off. See "Traction Control System" in the Index. Then shift back and forth between REVERSE (R) and a forward gear (or with a manual transmission, between FIRST (1) or SECOND (2) and REVERSE (R)), spinning the wheels as little as possible. Release the accelerator pedal while you shift, and press lightly on the accelerator pedal when the transmission is in gear. By slowly spinning your wheels in the forward and reverse directions, you will cause a rocking motion that may free your vehicle. If that doesn't get you out after a few tries, you may need to be towed out. If you do need to be towed out, see "Towing Your Vehicle" in the Index.

Using the Tow Hooks (Option)

If your vehicle is equipped with tow hooks, the hooks are provided at the front of your vehicle. You may need to use them if you're stuck off-road and need to be pulled to some place where you can continue driving.

⚠ CAUTION:

These hooks, when used, are under a lot of force. Always pull the vehicle straight out. Never pull on the hooks at a sideways angle. The hooks could break off and you or others could be injured from the chain or cable snapping back.

NOTICE:

Never use the tow hooks to tow the vehicle. Your vehicle could be damaged and it would not be covered by warranty.

Section 6 Service and Appearance Care

Here you will find information about the care of your vehicle. This section begins with service and fuel information, and then it shows how to check important fluid and lubricant levels. There is also technical information about your vehicle, and a part devoted to its appearance care.

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6-4 Fuel (Gasoline Engine)
6-5 Diesel Fuel Requirements and Fuel System
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Service

Your dealer knows your vehicle best and wants you to be happy with it. We hope you'll go to your dealer for all your service needs. You'll get genuine GM parts and GM-trained and supported service people.

We hope you'll want to keep your GM vehicle all GM. Genuine GM parts have one of these marks:

Doing Your Own Service Work

If you want to do some of your own service work, you'll want to use the proper service manual. It tells you much more about how to service your vehicle than this manual can. To order the proper service manual, see "Service and Owner Publications" in the Index.

You should keep a record with all parts receipts and list the mileage and the date of any service work you perform. See "Maintenance Record" in the Index.

⚠ CAUTION:

You can be injured and your vehicle could be damaged if you try to do service work on a vehicle without knowing enough about it.

- **Be sure you have sufficient knowledge, experience, the proper replacement parts and tools before you attempt any vehicle maintenance task.**
- **Be sure to use the proper nuts, bolts and other fasteners. "English" and "metric" fasteners can be easily confused. If you use the wrong fasteners, parts can later break or fall off. You could be hurt.**

Two Safety Cautions about Engine Fan Breakage

⚠ CAUTION:

Changing the Fan Drive Ratio or Engine Governed Speed

If you change the fan drive ratio or increase the governed speed of the engine, you may increase stress on the engine fan and the fan could eventually fail. If the fan breaks apart while it is rotating, the flying pieces can cause severe injury to anyone -- such as a service technician -- who is nearby. And, of course, the pieces can severely damage the vehicle. Don't change the fan drive ratio or increase the governed speed of the vehicle without getting the necessary information from your dealer.

CAUTION: (Continued)

CAUTION: (Continued)

Winter Fronts, Grille Covers or Obstructions

Winter fronts, grille covers or other add-on equipment causing obstructions in front or behind the fan should not be used on this vehicle. They may increase the stress on the fan as the blades pass over the covered areas. If this causes the fan to eventually break apart while it is rotating, the pieces can cause severe injury to anyone nearby, such as a service technician working on the engine, and of course the pieces can severely damage the vehicle.

Fuel (Gasoline Engine)

If your vehicle has a diesel engine, see “Diesel Engine Fuel” in this section. For vehicles with gasoline engines, please read this.

Gasoline Octane

Use regular unleaded gasoline with a posted octane of 87 or higher. If the octane is less than 87, you may get a heavy knocking noise when you drive. If it is bad enough, it can damage your engine. A little pinging noise when you accelerate or drive uphill is considered normal. This does not indicate a problem exists or that a higher-octane fuel is necessary.

Gasoline Specifications

It is recommended that gasoline meet specifications which were developed by the American Automobile Manufacturers Association and endorsed by the Canadian Vehicle Manufacturers’ Association for better vehicle performance and engine protection. Gasolines meeting these specifications could provide improved driveability and emission control system performance compared to other gasolines.

In Canada, look for the “Auto Makers’ Choice” label on the pump.

Canada Only

Additives

Some gasolines that are not reformulated for low emissions may contain an octane-enhancing additive called methylcyclopentadienyl manganese tricarbonyl (MMT); ask the attendant where you buy gasoline whether the fuel contains MMT. General Motors does not recommend the use of such gasolines. Fuels containing MMT can reduce the life of spark plugs and the performance of the emission control system may be affected. The malfunction indicator lamp may turn on. If this occurs, return to your authorized GM dealer for service.

To provide cleaner air, all gasolines in the United States are now required to contain additives that will help prevent engine and fuel system deposits from forming, allowing your emission control system to work properly. You should not have to add anything to your fuel. Gasolines containing oxygenates, such as ethers and ethanol, and reformulated gasolines may be available in your area to contribute to clean air. General Motors recommends that you use these gasolines, particularly if they comply with the specifications described earlier.

NOTICE:

Your vehicle was not designed for fuel that contains methanol. Don't use fuel containing methanol. It can corrode metal parts in your fuel system and also damage plastic and rubber parts. That damage wouldn't be covered under your warranty.

Diesel Fuel Requirements and Fuel System

Diesel Engine Fuel

For the Caterpillar® diesel, see the Caterpillar® Operation & Maintenance Manual for information concerning fuel usage.

NOTICE:

Diesel fuel or fuel additives not recommended in this manual could damage your fuel system and engine. Your warranty wouldn't cover this damage. And:

- **Diesel fuel that has been mixed with engine oil could damage your engine and emission controls.**
- **If you ever run out of diesel fuel, it can be difficult to restart your engine. To avoid all this, never let your tank get empty.**

If you run out of fuel, "Running Out of Fuel," later in this section, tells you how to restart your engine.

What Fuel to Use

In the United States, for best results use Number 2-D diesel fuel year-round (above and below freezing conditions) as oil companies blend Number 2-D fuel to address climate differences. Number 1-D diesel fuel may be used in very cold temperatures (when it stays below 0°F or -18°C); however, it will produce a power and fuel economy loss. Avoid the use of Number 1-D diesel fuel in warm or hot climates. It may result in stalling, poor starting when the engine is hot and may damage the fuel injection system.

At a minimum, the diesel fuel you use should meet specifications ASTM D975-00 (Grade Low Sulfur) in the United States. In addition, the Engine Manufacturers Association (EMA) has identified properties of an improved diesel fuel for better engine performance and durability. Diesel fuels corresponding to the EMA Recommended Guideline on Premium Diesel Fuel (FQP-1A) could provide better starting, less noise and better vehicle performance. If there are questions about the fuel you are using, contact your fuel supplier.

Diesel fuel may foam when you fill your tank. This can cause the automatic pump nozzle to shut off, even though your tank isn't full. If this happens, just wait for the foaming to stop and then continue to fill your tank.

⚠ CAUTION:

Heat coming from the engine may cause the fuel to expand and force the fuel out of your tank. If something ignites the fuel, a fire could start and people could be burned. To help avoid this, fill your fuel tank only until the automatic nozzle shuts off. Don't try to "top it off."

What Fuel to Use in Canada

Canadian fuels are blended for seasonal changes. Diesel Type “A” fuel is blended for better cold weather starting (below 0°F or -18°C); however, you may notice some power and fuel economy loss. If Type “A” fuel is used in warmer temperatures, stalling and hard starting may occur. Diesel Type “B” fuel is blended for temperatures above 0°F (-18°C). The emission control system requires the use of diesel fuel with low-sulfur (.05% by weight) content. Both low- and higher-sulfur fuels will be available in Canada. Only low-sulfur diesel fuels are available in the United States. It is important that diesel-powered trucks are refueled only with low-sulfur fuel. Use of fuels with higher-sulfur content will affect the function of the emission components and may cause reduced performance, excessive smoke and unpleasant odor.

At a minimum, the diesel fuel you use should meet specifications CAN/CGSB-3.517-2000 (Low Sulfur Diesel) in Canada. In addition, the Engine Manufacturers Association (EMA) has identified properties of an improved diesel fuel for better engine performance and durability (FQP-1A). Diesel fuels corresponding to the EMA description could provide better starting, less noise and better vehicle performance. If there are questions about the fuel you are using, contact your fuel supplier.

Very Cold Weather Operation

Follow the instructions listed previously under the heading “What Fuel to Use.”

NOTICE:

Never use home heating oil or gasoline in your diesel engine. They can cause engine damage.

In cold weather, your fuel filter may become clogged (waxed). To unclog it, move the vehicle to a warm garage area and warm the filter to between 32°F and 50°F (0°C to 10°C). You won’t need to replace it. Additional information on the fuel filter follows.

Water in Fuel

⚠ CAUTION:

Diesel fuel containing water is still flammable. You could be burned. If you ever try to drain water from your fuel, keep sparks, flames and smoking materials away from the mixture.

NOTICE:

If there is water in your diesel fuel and the weather is warm or humid, fungus and bacteria can grow in the fuel. They can damage your fuel system. You'll need a diesel fuel biocide to sterilize your fuel system. Your dealer can advise you if you ever need this.

If your fuel tank needs to be purged to remove water, see your dealer or a qualified technician. Improper purging can damage your fuel system.

Sometimes, water can be pumped into your fuel tank along with your diesel fuel. This can happen if a service station doesn't regularly inspect and clean its fuel tanks, or if it gets contaminated fuel from its suppliers.

If this happens, a water-in-fuel indicator will come on. If it does, the water must be drained. Your dealer can show you how to do this.

If it comes on, use this chart.

NOTICE:

If you drive when this warning indicator is on, you can damage your fuel injection system and your engine. If the indicator comes on right after you refuel, it means water was pumped into your fuel tank. Turn off your engine immediately. Then, have the water drained at once.

Water In Fuel Indicator Chart

Problem	Recommended Action
Indicator comes on intermittently.	Drain water from fuel filter.
Indicator stays on:	
• At temperatures above freezing.	Drain fuel filter immediately. If no water can be drained and light stays on, see your dealer for assistance.
• At temperatures below freezing.	Drain fuel filter immediately. If no water can be drained -- water may be frozen in water drain system. Water may be frozen in the fuel lines. Move the vehicle to a warm location to thaw out, and then drain filter system.
• Immediately after refueling, large amount of water possibly pumped into fuel tank.	Fuel tank purging required. See your dealer for assistance.

To drain water, do the following:

1. Stop and park the vehicle in a safe place. Turn off the engine and apply the parking brake.
2. Remove the fuel cap.
3. Place a fuel-resistant container under the fuel filter. The filter drain valve is located on the bottom of the fuel filter. The fuel filter is located in the engine compartment on the passenger's side of the vehicle, or on the driver's side frame rail near the engine.

4. Open the drain valve by turning two to three turns. When fuel empties from the valve, all the water has been drained. Close the valve hand tight.
5. Remove the fuel-resistant container and properly dispose of the contaminated fuel. To find out how to properly dispose of contaminated diesel fuel, see "What to Do with Used Oil" in the "Engine Oil (Diesel Engines)" part, later in this section.
6. Install the fuel cap.
7. Start the engine and let it run for a few minutes. If the engine stalls, the fuel system may need to be primed. While draining the water from the fuel filter, air may enter the fuel system. If air has entered the fuel system the fuel system will need to be primed. Refer to "Fuel Priming" later in this section.

If the water in fuel indicator comes on again after driving a short distance or the engine runs rough or stalls, a large amount of water has probably been pumped into the fuel tank. The fuel tank should be purged.

Fuel Priming

In order for the DURAMAX diesel engine fuel system to work properly, the fuel lines must be full of fuel and contain no air. If air gets into the fuel lines, it will be necessary to prime the fuel lines to eliminate air before operating the vehicle.

Q: How does air get into the fuel lines?

A: One of the following may have happened:

- The vehicle ran out of fuel, or
- The fuel filter was removed for servicing or replacement, or
- The fuel lines were removed or disconnected for servicing, or
- The fuel filter water drain valve was opened while the engine was running.

If one or more of the above occur, it is very likely that air has entered your fuel system and that you will need to prime the fuel system before operating the vehicle. Air in the fuel lines will not harm the engine or the vehicle.

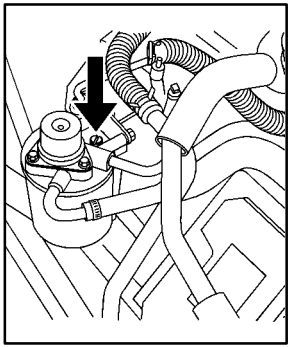
However, the engine may not be able to start until the fuel system is primed and the air is removed.

Q: How do I prime the vehicle?

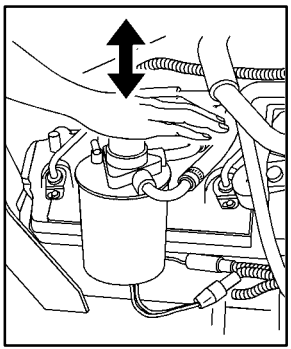
A: Your vehicle is equipped with a priming pump which is part of the engine mounted fuel filter. The vent valve and the fuel filter primer pump are located on top of the fuel filter housing. The priming pump is hand operated and is designed to bring fuel to the engine to eliminate any air that may be in the fuel lines.

To prime the engine, do the following:

1. Make sure there is fuel in the tank.
2. Make sure the fuel filter had been installed and properly tightened.
3. Make sure the fuel lines are properly connected and the fuel filter is cool enough to touch.
4. Remove any dirt from the fuel filter head and vent valve by wiping with a cloth.



5. Open the fuel filter vent valve by turning the screw counterclockwise several full turns.



6. Repeatedly press down on the fuel filter primer pump with the palm of your hand. Let the pump return upward between presses.

7. Operate the priming pump until a small amount of fuel seeps from the vent valve. When you see the fuel, the filter is now full of fuel and the system should be primed.
8. Close the vent valve.
9. Clean any fuel which accumulated on the fuel filter.
10. Start the engine and let it idle for a few minutes.
11. Check the filter for leaks.

Running Out of Fuel (Diesel Engines)

If the engine stalls and you think that you've run out of fuel, do this:

⚠ CAUTION:

Diesel fuel is flammable. It could start a fire if it gets on hot engine parts. You could be burned. Don't let too much fuel flow from the air bleed valve, and wipe up any spilled fuel with a cloth.

To restart your engine:

1. If you're parked on a level surface, add at least two gallons of fuel to each fuel tank your vehicle may have. However, if you're parked on a slope, you may need to add up to five gallons of fuel.
2. Follow the fuel priming procedure earlier in this section to prime the fuel filter.
3. Close the air bleed valve
4. Turn the ignition key to START for 10 to 15 seconds at a time until your engine starts. If the engine tries to run, but does not run smoothly, increase the rpm a little using the accelerator pedal. This will help force air through the system.

Fuel Filter Replacement (Diesel Engines)

If you want to change the fuel filter yourself, here's how to do it:

> **⚠ CAUTION:**
>
> **Diesel fuel is flammable. It could start a fire if something ignites it, and you could be burned. Don't let it get on hot engine parts, and keep matches or other ignition sources away.**

First, drain any water from the filter following the procedure for draining water listed previously.

Your vehicle's engine should be off until the end of this procedure.

The fuel filter is located in the engine compartment on the passenger's side of the vehicle, or on the driver's side frame rail in front of the fuel tank.

1. Apply the parking brake.

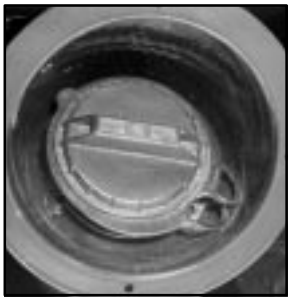
2. Unplug the water sensor wire connected to the fuel filter and unscrew the filter element.
3. Remove the filter element. If there is any dirt on the filter sealing surface, clean it off. Remove and reuse the water sensor float switch located on the bottom of the fuel filter.
4. Install the new filter element.
5. Reinstall and tighten the filter container and reconnect the water sensor wire to the filter.
6. Use the fuel filter priming procedure earlier in this section to prime the fuel filter.
7. Tighten the air bleed valve by turning it clockwise until hand tight.
8. Start your engine and let it idle for five minutes. Check your fuel filter and air bleed valve for leaks.

Fuels in Foreign Countries (Gasoline Engines)

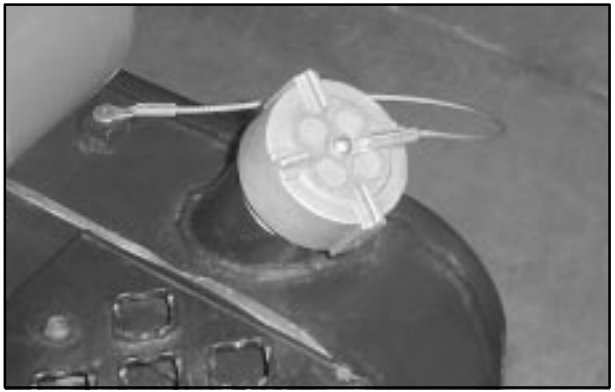
If you plan on driving in another country outside the United States or Canada, the proper fuel may be hard to find. Never use leaded gasoline or any other fuel not recommended in the previous text on fuel. Costly repairs caused by use of improper fuel wouldn't be covered by your warranty.

To check on fuel availability, ask an auto club, or contact a major oil company that does business in the country where you'll be driving.

Filling Your Tank



C4/C5 Models



C6/C7/C8 Models

⚠ CAUTION:

Fuel vapor is highly flammable. It burns violently, and that can cause very bad injuries. Don't smoke if you're near fuel or refueling your vehicle. Keep sparks, flames and smoking materials away from fuel.

The fuel cap can be on either or both sides of your vehicle depending on option content.

To take off the cap, turn it slowly to the left (counterclockwise).

⚠ CAUTION:

Gasoline Engine Vehicles: If you get gasoline on you and then something ignites it, you could be badly burned. Gasoline can spray out on you if you open the fuel cap too quickly. This spray can happen if your tank is nearly full, and is more likely in hot weather. Open the fuel filler cap slowly and wait for any "hiss" noise to stop. Then unscrew the cap all the way.

When you put the cap back on, turn it to the right (clockwise) until it is tight.

NOTICE:

If you need a new fuel cap, be sure to get the right type. Your dealer can get one for you. If you get the wrong type, it may not fit or have proper venting, and your fuel tank and emissions system might be damaged.

If you have dual tanks, fill the driver's side tank, or forward tank, first. The fuel gage will give better readings this way. Your gage will show the average level of both tanks combined.

Filling a Portable Fuel Container

⚠ CAUTION:

Never fill a portable fuel container while it is in your vehicle. Static electricity discharge from the container can ignite the gasoline vapor. You can be badly burned and your vehicle damaged if this occurs. To help avoid injury to you and others:

- **Dispense gasoline only into approved containers.**
- **Do not fill a container while it is inside a vehicle, in a vehicle's trunk, pickup bed or on any surface other than the ground.**
- **Bring the fill nozzle in contact with the inside of the fill opening before operating the nozzle. Contact should be maintained until the filling is complete.**
- **Don't smoke while pumping gasoline.**

Checking Things Under the Hood

⚠ CAUTION:

Things that burn can get on hot engine parts and start a fire. These include liquids like fuel, oil, coolant, brake fluid, windshield washer and other fluids, and plastic or rubber. You or others could be burned. Be careful not to drop or spill things that will burn onto a hot engine.

Hood Latches

To tilt the hood forward, pull back and up on each of the hood latches, located above the wheel wells on both sides of the vehicle.

Then take the hand hold and pull the hood forward.

When you tilt the hood far enough, the cables will support it.

Noise Control System

The following information relates to compliance with federal noise emission standards for vehicles with a Gross Vehicle Weight Rating (GVWR) of more than 10,000 lbs. (4 536 kg). The Maintenance Schedule provides information on maintaining the noise control system to minimize degradation of the noise emission control system during the life of your vehicle. The noise control system warranty is given in your warranty booklet.

These standards apply only to vehicles sold in the United States.

Tampering With Noise Control System Prohibited

Federal law prohibits the following acts or the causing thereof:

1. The removal or rendering inoperative by any person, other than for purposes of maintenance, repair or replacement, of any device or element of design incorporated into any new vehicle for the purpose of noise control, prior to its sale or delivery to the ultimate purchaser or while it is in use; or
2. The use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

Among those acts presumed to constitute tampering are the acts listed below.

Insulation:

- Removal of the noise shields or any underhood insulation.

Engine:

- Removal or rendering engine speed governor (if equipped) inoperative so as to allow engine speed to exceed manufacturer specifications.

Fan and Drive:

- Removal of fan clutch (if equipped) or rendering clutch inoperative.
- Removal of the fan shroud (if equipped).

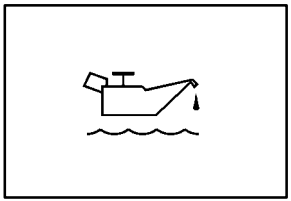
Air Intake:

- Removal of the air cleaner silencer.
- Modification of the air cleaner.

Exhaust:

- Removal of the muffler and/or resonator.
- Removal of the exhaust pipes and exhaust pipe clamps.

Engine Oil (Gasoline Engine)



If the low oil light appears on the instrument cluster, it means you need to check your engine oil level right away. For more information, see “Low Oil Light” in the Index.

You should check your engine oil level regularly; this is an added reminder.

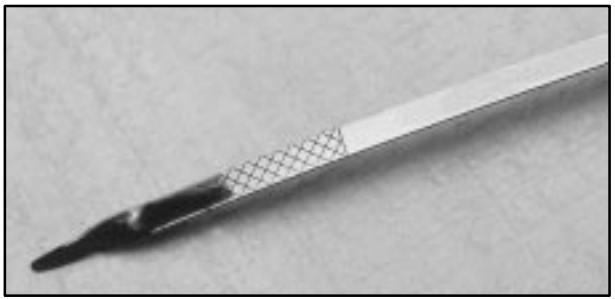
Checking Engine Oil

It's a good idea to check your engine oil every time you get fuel. In order to get an accurate reading, the oil must be warm and the vehicle must be on level ground.

The engine oil dipstick is located in the engine compartment on the driver's side of the vehicle.

Turn off the engine and give the oil several minutes to drain back into the oil pan. If you don't, the oil dipstick might not show the actual level.

Pull out the dipstick and clean it with a paper towel or cloth, then push it back in all the way. Remove it again, keeping the tip down, and check the level.



When to Add Engine Oil

If the oil is at or below the cross-hatched area, then you'll need to add at least one quart of oil. But you must use the right kind. This part explains what kind of oil to use. For engine oil crankcase capacity, see "Capacities and Specifications" in the Index.

NOTICE:

Don't add too much oil. If your engine has so much oil that the oil level gets above the cross-hatched area upper mark that shows the proper operating range, your engine could be damaged.

The engine oil fill cap is located near the engine oil dipstick in the engine compartment, on the driver's side of the vehicle.

Be sure to fill it enough to put the level somewhere in the proper operating range. Push the dipstick all the way back in when you're through.

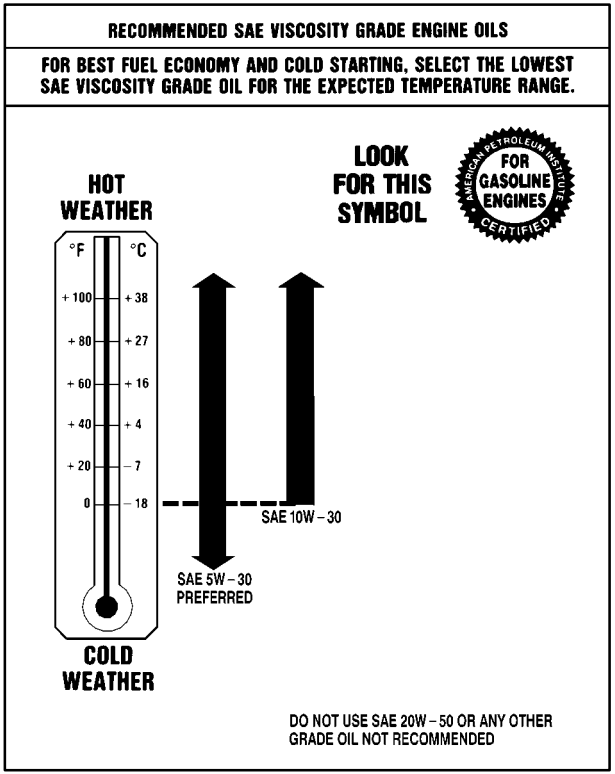
What Kind of Engine Oil to Use

Oils recommended for your vehicle can be identified by looking for the starburst symbol.

This symbol indicates that the oil has been certified by the American Petroleum Institute (API). Do not use any oil which does not carry this starburst symbol.

If you change your own oil, be sure you use oil that has the starburst symbol on the front of the oil container. If you have your oil changed for you, be sure the oil put into your engine is American Petroleum Institute certified for gasoline engines.

You should also use the proper viscosity oil for your vehicle, as shown in the viscosity chart.



As in the chart shown previously, SAE 5W-30 is best for your vehicle. However, you can use SAE 10W-30 if it's going to be 0°F (-18°C) or above. These numbers on an oil container show its viscosity, or thickness. Do not use other viscosity oils, such as SAE 20W-50.

NOTICE:

Use only engine oil with the American Petroleum Institute Certified For Gasoline Engines starburst symbol. Failure to use the recommended oil can result in engine damage not covered by your warranty.

GM Goodwrench® oil meets all the requirements for your vehicle.

If you are in an area where the temperature falls below -20°F (-29°C), consider using either an SAE 5W-30 synthetic oil or an SAE 0W-30 oil. Both will provide easier cold starting and better protection for your engine at extremely low temperatures.

Engine Oil Additives

Don't add anything to your oil. The recommended oils with the starburst symbol are all you will need for good performance and engine protection.

When to Change Engine Oil (GM Oil Life System™)

Your vehicle has a computer system that lets you know when to change the engine oil and filter. This is based on engine revolutions and engine temperature, and not on mileage. Based on driving conditions, the mileage at which an oil change will be indicated can vary considerably. For the oil life system to work properly, you must reset the system every time the oil is changed.

When the system has calculated that oil life has been diminished, it will indicate that an oil change is necessary. A change oil light will come on. Change your oil as soon as possible within the next two times you stop for fuel. It is possible that, if you are driving under the best conditions, the oil life system may not indicate that an oil change is necessary for over a year. However, your engine oil and filter must be changed at least once a year and at this time the system must be reset. It is also important to check your oil regularly and keep it at the proper level.

If the system is ever reset accidentally, you must change your oil at 3,000 miles (5 000 km) since your last oil change. Remember to reset the oil life system whenever the oil is changed.

How to Reset the Change Oil Light

The GM Oil Life System™ calculates when to change your engine oil and filter based on vehicle use. Anytime your oil is changed, reset the system so it can calculate when the next oil change is required. If a situation occurs where you change your oil prior to a change oil light being turned on, reset the system.

To reset the change oil light, do the following:

1. Turn the ignition key to RUN with the engine off.
2. Fully press and release the accelerator pedal three times within 10 seconds.

If the change oil light flashes for five seconds, the system is reset. If the light does not display for five seconds, you will need to repeat the steps.

What to Do with Used Oil

Used engine oil contains certain elements that may be unhealthy for your skin and could even cause cancer. Don't let used oil stay on your skin for very long. Clean your skin and nails with soap and water, or a good hand cleaner. Wash or properly throw away clothing or rags containing used engine oil. See the manufacturer's warnings about the use and disposal of oil products.

Used oil can be a threat to the environment. If you change your own oil, be sure to drain all the oil from the filter before disposal. Never dispose of oil by putting it in the trash, pouring it on the ground, into sewers, or into streams or bodies of water. Instead, recycle it by taking it to a place that collects used oil. If you have a problem properly disposing of your used oil, ask your dealer, a service station or a local recycling center for help.

Engine Oil (Caterpillar® Diesel Engines)

See your Caterpillar® Operation & Maintenance Manual for information on oil quality and viscosities as well as the temperature range chart.

Engine Oil (DURAMAX™ Diesel)

Checking Engine Oil

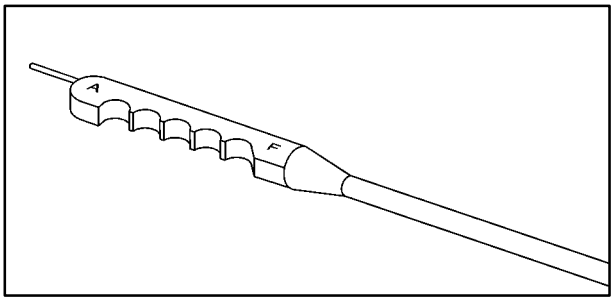
It's a good idea to check your engine oil level every time you get fuel.

The engine oil dipstick is located in the engine compartment on the driver's side of the vehicle.

In order to get an accurate reading, the oil must be warm (at normal operating temperature) and the vehicle must be on level ground.

Turn off the engine and give the oil at least five minutes to drain back into the oil pan. With a cool engine, allow 30 minutes. If you don't, the oil dipstick might not show the actual level.

Pull out the dipstick and clean it with a paper towel or a cloth, then push it back in all the way. Remove it again, keeping the tip down.



When to Add Engine Oil

If the oil is at or below the ADD line, then you'll need to add at least one quart of oil. But you must use the right kind. This part explains what kind of oil to use. For engine oil crankcase capacity, see "Capacities and Specifications" in the Index.

NOTICE:

Don't add too much oil. If your engine has so much oil that the oil level gets above the proper operating range, your engine could be damaged.

Be sure to fill it enough to put the level somewhere in the proper operating range. Push the dipstick all the way back in when you're through.

What Kind of Engine Oil to Use

Look for these two things:

- CH-4

  Oils designated as API CH-4 are best for your vehicle. The CH-4 designation may appear either alone or in combination with other API designations, such as API CH-4/SJ or CH-4/CG-4/SJ.

  These letters show American Petroleum Institute (API) levels of quality.

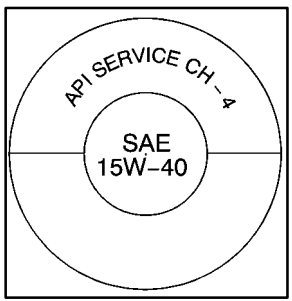
NOTICE:

If you use oil that doesn't have this designation, CH-4, you can cause engine damage which is not covered by your warranty.

- SAE 15W-40

  As shown in the viscosity chart, SAE 15W-40 is best for your vehicle. However, you can use SAE 10W-30 at temperatures above 0°F (-18°C). When it's very cold, below 0°F (-18°C), you should use SAE 5W-40 to improve cold starting.

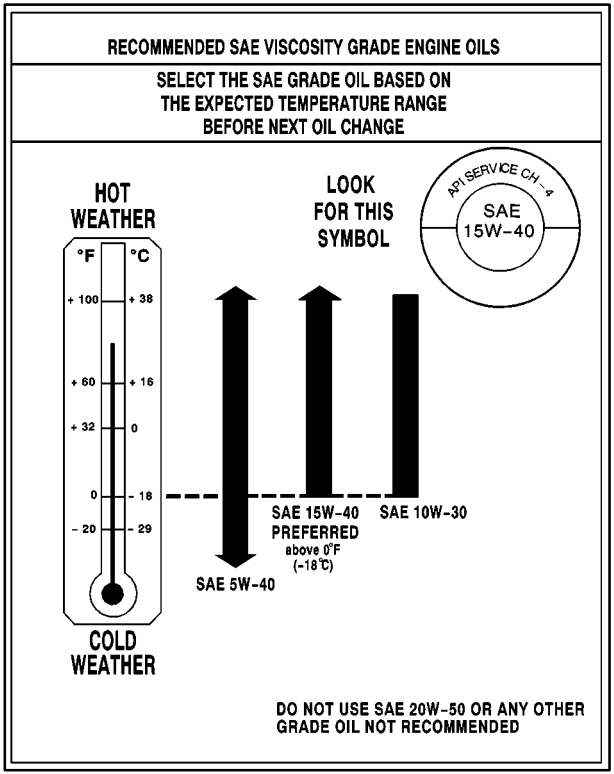
  These numbers on the oil container show its viscosity, or thickness. Do not use other viscosity oils such as SAE 10W-40 or SAE 20W-50.



This doughnut-shaped logo (symbol) is used on most oil containers to help you select the correct oil. It means that the oil has been certified by the American Petroleum Institute.

You should look for this on the oil container, and use *only* those oils that display the logo.

GM Goodwrench® oil of the recommended viscosity grades meets all the requirements for your vehicle.



Engine Oil Additives

Don't add anything to your oil. The recommended oils with the API service symbol are all you will need for good performance and engine protection.

When to Change Engine Oil

Change engine oil and filter every 10,000 miles (16 000 km) or every 12 months, whichever occurs first.

What to Do with Used Oil

Used engine oil contains certain elements that may be unhealthy for your skin and could even cause cancer. Don't let used oil stay on your skin for very long. Clean your skin and nails with soap and water, or a good hand cleaner. Wash or properly throw away clothing or rags containing used engine oil. See the manufacturer's warnings about the use and disposal of oil products.

Used oil can be a threat to the environment. If you change your own oil, be sure to drain all the oil from the filter before disposal. Never dispose of oil by putting it in the trash, pouring it on the ground, into sewers, or into streams or bodies of water. Instead, recycle it by taking it to a place that collects used oil. If you have a problem properly disposing of your used oil, ask your dealer, a service station or a local recycling center for help.

Engine Air Cleaner/Filter

Refer to the Maintenance Schedule to determine when to replace the engine air cleaner/filter. See "Scheduled Maintenance" in the Index.

The engine air cleaner/filter is located in the center of the engine compartment.

Your gasoline or diesel engine has a restriction indicator that lets you know when the engine air cleaner/filter needs to be serviced.

The restriction indicator is located in the engine compartment near the engine air cleaner/filter, on the passenger's side of the vehicle.

When the yellow indicator reaches the red ring in the sight glass, it's time to service the engine air cleaner/filter.

After the engine air cleaner/filter is properly serviced, the indicator can be reset by pressing the button on top of the indicator.

⚠ CAUTION:

Gasoline Engines Only: Operating the engine with the air cleaner/filter off can cause you or others to be burned. The air cleaner not only cleans the air, it stops flame if the engine backfires. If it isn't there, and the engine backfires, you could be burned. Don't drive with it off, and be careful working on the engine with the air cleaner/filter off.

NOTICE:

Gasoline Engines Only: If the air cleaner/filter is off, a backfire can cause a damaging engine fire. And, dirt can easily get into your engine, which will damage it. Always have the air cleaner/filter in place when you're driving.

Your vehicle may be equipped with an optional instrument panel mounted air filter restriction indicator. See "Warning Lights, Gages and Indicators" in the Index.

Automatic Transmission Fluid

When to Check

A good time to have it checked is when the engine oil is checked. See your Allison Automatic Transmission Operator's Manual to find out when to change your transmission fluid and filters.

How to Check and What to Use

The Allison Automatic Transmission Operator's Manual that came with the vehicle shows how to check the automatic transmission fluid and what fluid to use.

Automatic Transmission External Filter

Your automatic transmission filter requires periodic replacement.

Consult the Allison Automatic Transmission Operator's Manual that came with the vehicle for proper change intervals.

Manual Transmission Fluid

Refer to the Maintenance Schedule to determine how often to check the lubricant and when to change it. See "Scheduled Maintenance Services" in the Index.

Refer to the Maintenance Schedule to determine what kind of fluid to use. See "Recommended Fluids and Lubricants" in the Index.

When to Check

A good time to have it checked is when the engine oil is checked. See your Maintenance Schedule to find out when to change your transmission fluid.

How to Check and What to Use

Check the fluid level only when your engine is off, the vehicle is parked on a level place and the transmission is cool enough for you to rest your fingers on the transmission case.

Then, follow these steps:

1. Remove the filler plug.
2. Check to be sure that the lubricant level is up to the bottom of the fill opening. On heavy duty transmissions (an inch of oil level equals about one gallon of fluid.)
3. If the fluid level is good, install the plug and be sure it is fully seated. If the fluid level is low, add more fluid as described in the next steps.

How to Add Fluid

Here's how to add fluid. Refer to the Maintenance Schedule to determine the proper fluid to use. See "Recommended Fluids and Lubricants" in the Index.

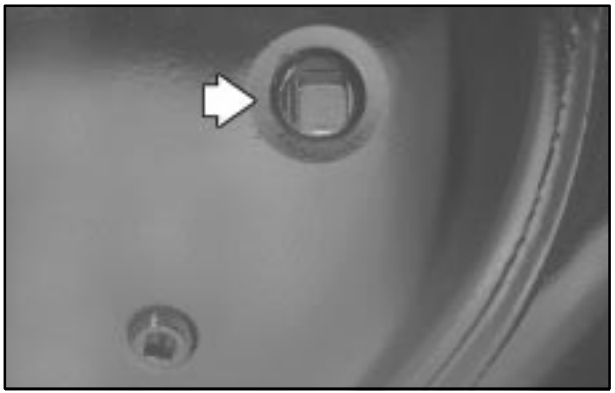
1. Remove the filler plug.
2. Add fluid at the filler plug hole. Add only enough fluid to bring the fluid level up to the bottom of the fill opening.
3. Install the filler plug. Be sure the plug is fully seated.

Rear Axle

When to Check and Change Lubricant

Refer to the Maintenance Schedule to determine how often to check the lubricant and when to change it. See “Scheduled Maintenance Services” in the Index.

How to Check Lubricant



To get an accurate reading, the vehicle should be on a level surface.

If the level is below the bottom of the filler plug hole, you’ll need to add some lubricant. Add enough lubricant to raise the level to the bottom of the filler plug hole.

What to Use

Refer to the Maintenance Schedule to determine what kind of lubricant to use. See “Recommended Fluids and Lubricants” in the Index.

Rear Axle Shift Motor (Option)

When to Check and Change Fluid

If you have an optional air-shift two-speed, controlled traction, or locking differential type rear axle, a good time to check the fluid level in the axle shift motor is when the rear axle lubricant is checked. Use refrigerant oil (shift motor only).

How to Check Fluid

Remove the plug on the front plate of the axle shift motor, add enough fluid to raise the level to the bottom of the filler plug hole, then replace the plug.

What to Use

Refer to your Maintenance Schedule to determine what kind of lubricant to use. See “Recommended Fluids and Lubricants” in the Index.

Engine Coolant

If your vehicle has a Caterpillar diesel engine, the Caterpillar® Operation & Maintenance Manual provided with your vehicle has information regarding the proper coolant to use.

The cooling system in your vehicle is filled with DEX-COOL® engine coolant. This coolant is designed to remain in your vehicle for 5 years or 150,000 miles (240 000 km), whichever occurs first, if you add only DEX-COOL® extended life coolant.

The following explains your cooling system and how to add coolant when it is low. If you have a problem with engine overheating, see "Engine Overheating" in the Index.

A 50/50 mixture of clean, drinkable water and DEX-COOL® coolant will:

- Give freezing protection down to -34°F (-37°C).
- Give boiling protection up to 252°F (122°C).
- Protect against rust and corrosion.
- Help keep the proper engine temperature.
- Let the warning lights and gages work as they should.

NOTICE:

When adding coolant, it is important that you use only DEX-COOL® (silicate-free) coolant.

If coolant other than DEX-COOL is added to the system, premature engine, heater core or radiator corrosion may result. In addition, the engine coolant will require change sooner -- at 30,000 miles (50 000 km) or 24 months, whichever occurs first. Damage caused by the use of coolant other than DEX-COOL® is not covered by your new vehicle warranty.

What to Use

Use a mixture of one-half *clean, drinkable water* and one-half DEX-COOL® coolant which won't damage aluminum parts. If you use this coolant mixture, you don't need to add anything else.

⚠ CAUTION:

Adding only plain water to your cooling system can be dangerous. Plain water, or some other liquid such as alcohol, can boil before the proper coolant mixture will. Your vehicle's coolant warning system is set for the proper coolant mixture. With plain water or the wrong mixture, your engine could get too hot but you wouldn't get the overheat warning. Your engine could catch fire and you or others could be burned. Use a 50/50 mixture of clean, drinkable water and DEX-COOL® coolant.

NOTICE:

If you use an improper coolant mixture, your engine could overheat and be badly damaged. The repair cost wouldn't be covered by your warranty. Too much water in the mixture can freeze and crack the engine, radiator, heater core and other parts.

If you have to add coolant more than four times a year, have your dealer check your cooling system.

NOTICE:

If you use the proper coolant, you don't have to add extra inhibitors or additives which claim to improve the system. These can be harmful.

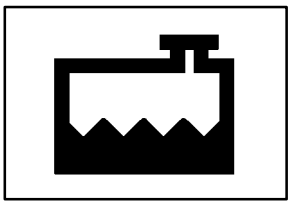
Checking Coolant

The coolant surge tank is located in the engine compartment on the driver's side of the vehicle.

⚠ CAUTION:

Turning the surge tank pressure cap when the engine and radiator are hot can allow steam and scalding liquids to blow out and burn you badly. Never turn the surge tank pressure cap -- even a little -- when the engine and radiator are hot.

The vehicle must be on a level surface. When your engine is cold, the coolant level should be at the COLD FILL mark or higher.



If the low coolant light comes on and stays on, it means you're low on engine coolant.

See "Lights, Low Coolant Warning Light" in the Index for further information.

Adding Coolant

If you need more coolant, add the proper DEX-COOL® coolant mixture *at the surge tank*, but only when the engine is cool.

⚠ CAUTION:

You can be burned if you spill coolant on hot engine parts. Coolant contains ethylene glycol, and it will burn if the engine parts are hot enough. Don't spill coolant on a hot engine.

When replacing the pressure cap, make sure it is hand-tight.

Engine Coolant (Caterpillar® Diesel Engine)

If your vehicle has a Caterpillar diesel engine, see the Caterpillar® Diesel Engine Operation & Maintenance Manual provided with your vehicle to find out what to add, also when and how to service your cooling system.

Surge Tank Pressure Cap

The surge tank pressure cap is located in the engine compartment, on the driver's side of the vehicle.

The surge tank pressure cap must be tightly installed.

NOTICE:

Your surge tank pressure cap is a 15 psi (103kPa) pressure-type cap for use with medium duty cooling systems only. It must be tightly installed to prevent coolant loss and possible engine damage from overheating.

Power Steering Fluid

See your Maintenance Schedule for when to check your power steering fluid.

How To Check Power Steering Fluid

Check your power steering fluid only when the engine is warm. If the engine isn't warm, you probably won't get an accurate reading.

If the fluid level is between the MIN and MAX marks, you have enough. If you need fluid, add only enough of the proper fluid to bring it into view in the sight glass.

If your power steering fluid level is low, this can cause the BRAKE or service brake soon warning lights to come on. If either light remains on after you have added power steering fluid to the proper level, then shut off the engine for 10 seconds. This should reset the brake warning lights. If one or both lights stay on though, see "Hydraulic Brake Warning Lights" in the Index.

What to Use

To determine what kind of fluid to use, see "Recommended Fluids and Lubricants" in the Index.

NOTICE:

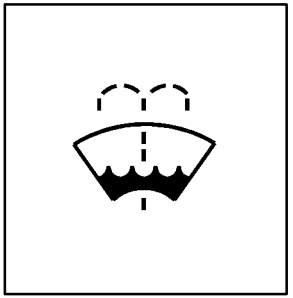
When adding power steering fluid or making a complete fluid change, always use the proper fluid. Failure to use the proper fluid can cause leaks and damage hoses and seals.

Windshield Washer Fluid

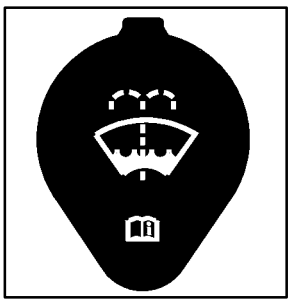
What to Use

When you need windshield washer fluid, be sure to read the manufacturer's instructions before use. If you will be operating your vehicle in an area where the temperature may fall below freezing, use a fluid that has sufficient protection against freezing.

Adding Washer Fluid



Your vehicle has a low washer fluid light that lets you know when to add washer fluid.



The windshield washer reservoir is located in the engine compartment on the driver's side of the vehicle.

Open the cap with the washer symbol on it. Add washer fluid until the tank is full.

NOTICE:

- **When using concentrated washer fluid, follow the manufacturer's instructions for adding water.**
- **Don't mix water with ready-to-use washer fluid. Water can cause the solution to freeze and damage your washer fluid tank and other parts of the washer system. Also, water doesn't clean as well as washer fluid.**
- **Fill your washer fluid tank only three-quarters full when it's very cold. This allows for expansion if freezing occurs, which could damage the tank if it is completely full.**
- **Don't use engine coolant (antifreeze) in your windshield washer. It can damage your washer system and paint.**

Brakes

Brake Fluid

If your vehicle has hydraulic brakes, there's a brake master cylinder. Refer to the Maintenance Schedule to determine when to check your brake fluid.

⚠ CAUTION:

Don't add brake fluid before you check the level. If you do, you could get too much brake fluid. Brake fluid could spill on the hot engine and it can catch fire. You could be burned and your vehicle could be damaged. See "Checking Brake Fluid" in this section.

Checking Brake Fluid (Hydro Max System)

Apply the brake pedal several times with the ignition off. Then clean one of the reservoir caps and the area around the cap, and remove it. The fluid level should be even with the bottom ring of the filler opening.

The Hydro Max brake fluid reservoir is located in the engine compartment on the driver's side of the vehicle.

If it's low, add enough fluid to fill the reservoir to the proper level.

Checking Brake Fluid (Hydro Boost System)

Apply the brake pedal several times with the ignition off. Clean the cover and the side of the reservoir. Check to see if the fluid level inside the reservoir falls within the MIN/MAX level indicator on the side of the reservoir.

The Hydro Boost brake fluid reservoir is located in the engine compartment on the driver's side of the vehicle.

If it's low, add enough fluid to fill the reservoir to the proper level.

What to Add

Use the proper fluid listed in your Maintenance Schedule. Use new brake fluid from a sealed container only.

Always clean the brake fluid reservoir cap/cover and the area around the cap/cover before removing it. This will help keep dirt from entering the reservoir.

⚠ CAUTION:

With the wrong kind of fluid in your brake system, your brakes may not work well, or they may not even work at all. This could cause a crash. Always use the proper brake fluid.

NOTICE:

- **Using the wrong fluid can badly damage brake system parts. For example, just a few drops of mineral-based oil, such as engine oil, in your brake system can damage brake system parts so badly that they'll have to be replaced. Don't let someone put in the wrong kind of fluid, and don't use DOT-5 silicone brake fluid.**
- **If you spill brake fluid on your vehicle's painted surfaces, the paint finish can be damaged. Be careful not to spill brake fluid on your vehicle. If you do, wash it off immediately. See "Appearance Care" in the Index.**

Four-Wheel Disc Brakes (Hydraulic Only)

Your vehicle has four-wheel disc brakes.

Some driving conditions or climates may cause a brake squeal when the brakes are first applied or lightly applied. This does not mean something is wrong with your brakes.

Brake linings should always be replaced as complete axle sets.

Four-Wheel and Six-Wheel Drum Brakes (Air Only)

The brake drums should be removed and inspected each time the tires are removed for rotation or changing. When you have the front brakes replaced, have the rear brakes inspected, too.

Brake linings should always be replaced as complete axle sets.

Brake Pedal Travel

See your dealer if the brake pedal does not return to normal height, or if there is a rapid increase in pedal travel. This could be a sign of brake trouble.

Brake Adjustment

Every time you make a brake stop, your brakes adjust for wear.

Replacing Brake System Parts

The braking system on a vehicle is complex. Its many parts have to be of top quality and work well together if the vehicle is to have really good braking. Your vehicle was designed and tested with top-quality GM brake parts. When you replace parts of your braking system -- for example, when your brake linings wear down and you need new ones put in -- be sure you get new approved GM replacement parts. If you don't, your brakes may no longer work properly. For example, if someone puts in brake linings that are wrong for your vehicle, the balance between your front and rear brakes can change -- for the worse. The braking performance you've come to expect can change in many other ways if someone puts in the wrong replacement brake parts.

Air Brake Systems (If Equipped)

If you have air brakes, it is important to get rid of moisture in the system. Moisture will damage your system if it isn't removed daily.

There are two ways to do this. One is automatic if your air-brake vehicle has the optional moisture ejector. If your vehicle doesn't have that option, however, you must drain the air reservoirs occasionally to be sure the air dryer is working properly.

Drain the air brakes at full system pressure. To be sure you're at full pressure, check your air pressure gage. It should read at least 100 psi (692 kPa).

Moisture Ejector (Option)

If you have air brakes with a moisture ejector, the valve automatically ejects moisture from the reserve tank when the air compressor cycles.

Air Dryer

If your vehicle has air brakes, you have an air dryer. This collects and removes dirt, moisture or other foreign matter from the air prior to entering the brake system. It is mounted on the passenger's side frame rail.

If your dryer is a Bendix-Westinghouse, it has a filter that you need to change at intervals. See your Maintenance Schedule for more about servicing this filter.

Electric Air Compressor (If Equipped)

Your vehicle may be equipped with an electric air compressor. This compressor is used to run options that require pressurized air, such as an air horn, air seat, exhaust restrictor or an exhaust brake.

This air compressor is used when vehicles are not equipped with an air brake system.

The air supply for this system must be maintained by releasing the drain valve to eject any moisture that may have built up in the system.

It is recommended that this system be drained on a weekly basis.

Clutch Pedal Free Travel

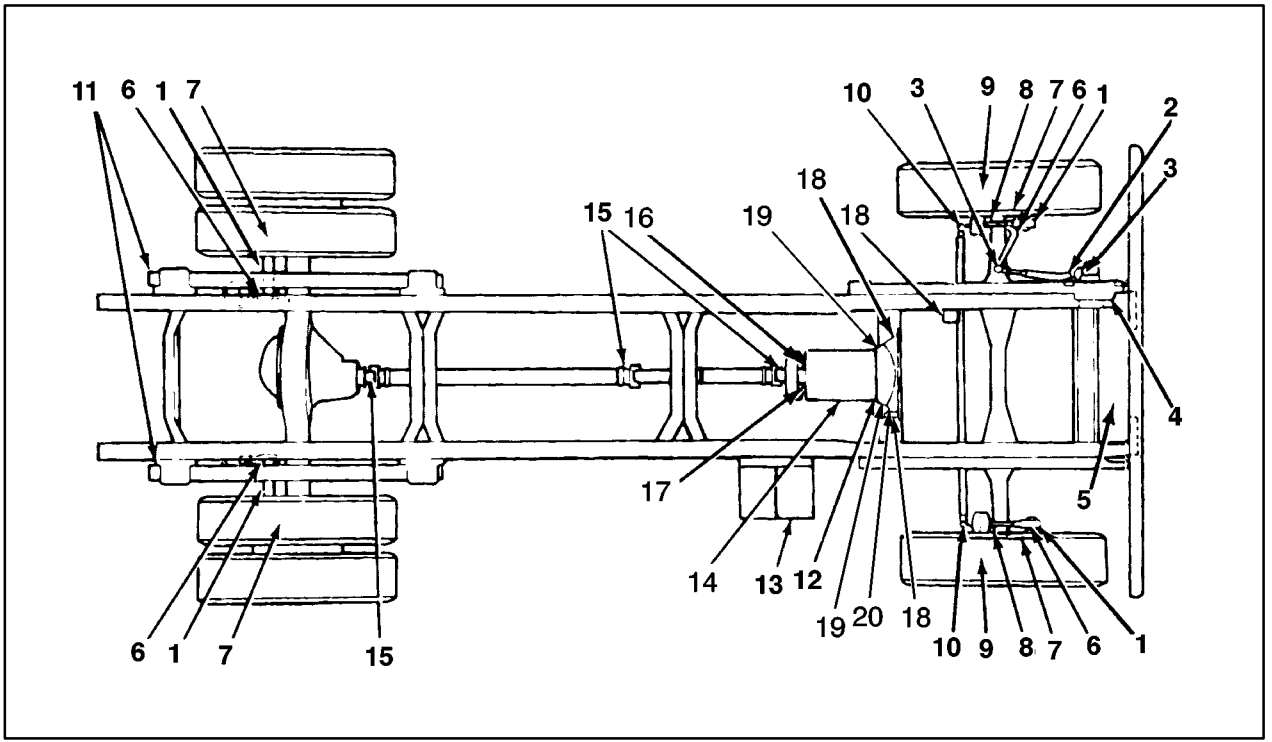
If you have a manual transmission, your clutch will need adjustment when pedal free travel gets down to about 1/4 inch (32 mm), as measured at the clutch pedal pad. You should have 1 1/2 to 2 inches (38 to 51 mm) of clutch pedal free travel. See “Maintenance Schedule” in the Index for more information.

If your clutch ever needs service, be sure to use only genuine GM clutch replacement parts.

Chassis Lubrication

Your Maintenance Schedule provides all of the required chassis lubrication intervals and identifies proper lubricants to use. Be sure to see your Maintenance Schedule before performing any chassis lubrication service. To determine location of chassis lubrication items, use the following charts.

Single Axle Models

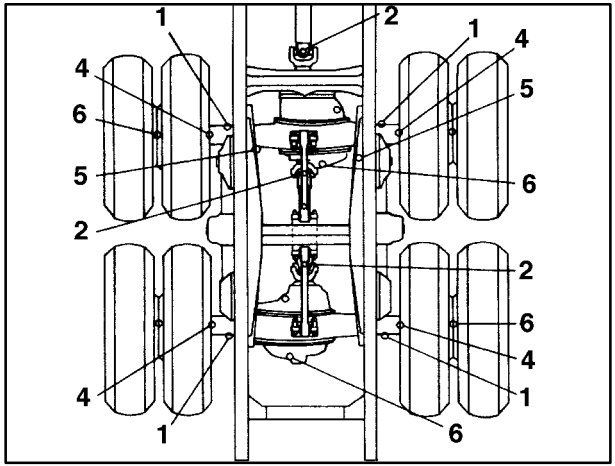


ITEM NO.	ITEM	REMARKS
1	Brake Camshaft ✓	One fitting each (apply sparingly).
2	Steering Column Slip Joint*	One fitting.
3	Steering Drag Link Ends	One fitting at each end.
4	Pivot Points and Hinges	Apply chassis lubricant
5	Pivot Points and Hinges	Apply chassis lubricant.
6	Slack Adjuster ✓	One fitting.
7	Brake Cam Roller Pins at interface of pin and shoe ✓	Apply engine oil.
8	Front Steering Knuckles	One fitting each side, lower bushing (hand-operated grease gun only). Hand-pack upper bearing.
9	Front Wheel Bearings	Hand-pack or lubricate.
10	Steering Tie Rod Ends	One fitting each end.
11	Spring Slip Pads* (Multi-Leaf Only)	Apply chassis lubricant.

ITEM NO.	ITEM	REMARKS
12	Clutch Release Bearing*	Cup or fitting.
13	Battery Terminal (except “ST” type)	Keep coated with petroleum jelly.
14	Transmission	Fill to level of filler plug.
15	Propshaft Slip Joints	Lubricate with GM Part No. 1051344 Wheel Bearing Lubricant.
16	Parking Brake Clevis Pins$	Apply chassis lubricant.
17	Parking Brake Lever Pivot*$	Apply chassis lubricant.
18	Clutch Release Cross Shaft, Master Cylinder$	Apply chassis lubricant, Fill to 1/4″ (6 mm) below opening.
19	Release Bearing, Clutch Cross Shaft	Two fittings, Apply chassis lubricant
20	Clutch Release Fork	Two fittings.

* Applies to some vehicles.
✓ Applies to air brakes only.
† Refer to Allison Transmission Operator’s Manual.
$ Applies to hydraulic brakes only.

Tandem Axle Models



ITEM NO.	ITEM	REMARKS
1	Brake Camshafts	One fitting each.
2	Propshaft U-Joint	One fitting each joint. Lubricate with GM Part No. 1051344, Wheel Bearing Lubricant.
4	Brake Shoe Roller Pins	Apply engine oil at pin to shoe joint only.
5	Rear Spring Pin	One fitting each side.
6	Rear Axles	Fill to level of filler plug.

Battery

Your new vehicle comes with one or more maintenance free ACDelco® batteries. When it's time for a new battery, be sure it has the replacement number shown on the original battery's label. We recommend an ACDelco battery.

WARNING: Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

Vehicle Storage

If you're not going to drive your vehicle for 25 days or more, remove the black, negative (-) cable from the battery. This will help keep your battery from running down. (If your vehicle has more than one battery, be sure to remove the negative (-) battery cable from each battery.)

⚠ CAUTION:

Batteries have acid that can burn you and gas that can explode. You can be badly hurt if you aren't careful. See "Jump Starting" in the Index for tips on working around a battery without getting hurt.

When you are ready to use the vehicle again, refer to the engine starting procedure in the Index.

Contact your dealer to learn how to prepare your vehicle for longer storage periods.

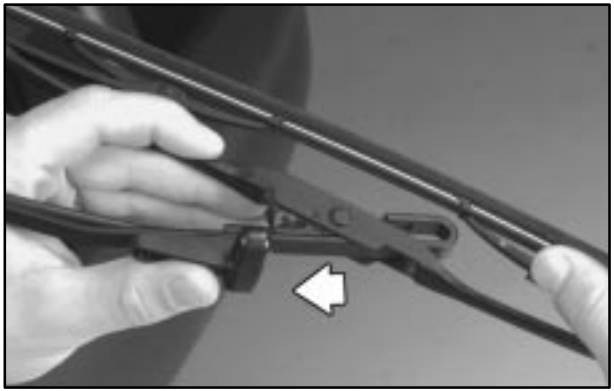
Windshield Wiper Blade Replacement

Windshield wiper blades should be inspected at least twice a year for wear or cracking. See “Wiper Blade Check” in the Index for more information.

Replacement blades come in different types and are removed in different ways.

Here’s how to remove the Shephard’s Hook type:

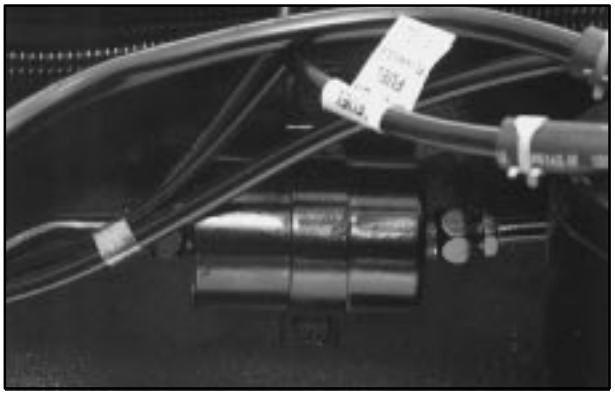
1. Pull the windshield wiper arm away from the windshield.



2. Push the release lever and slide the wiper assembly toward the driver’s side of the vehicle.
3. Install a new blade by reversing Steps 1 and 2.

Other Service Items

Fuel Filter (Gasoline Engines)



The steel fuel filter is located near the engine compartment on the driver's side of the vehicle. See your Maintenance Schedule for recommended service intervals.

If your vehicle is equipped with the optional Davco spin-on type filter, it is located on the driver's side frame rail.

Fuel Filter (Diesel Engines)

If you have a diesel engine, your fuel filter is located in the engine compartment on the driver's side of the vehicle, or along the driver's side frame rail. See "Fuel Filter Replacement" earlier in this section for further information.

Also see your Maintenance Schedule for recommended service intervals.

Primary Fuel Filter and Water Separator (If Equipped)

If you have a diesel engine, you may have this spin-on filter. It is located on the driver's side frame rail.

It has a clear plastic drain bowl at the bottom. Check the drain bowl occasionally for any water or particles.

To drain the bowl, do the following:

1. Shut off the engine.
2. Partially open the drain valve at the bottom of the filter.

See "Engine Oil" in the Index for proper disposal procedures.

Secondary Fuel Filter and Water Separator/Heater (If Equipped)

If you have a Caterpillar® diesel engine, you may also have this spin-on filter and fuel separator/heater. It will be mounted in the engine compartment on the driver's side of the vehicle.

It has a metal drain bowl at the bottom. Occasionally, check the bowl for any water or particles.

To check or drain the bowl, do the following:

- Shut off the engine.
- Push up on the spring loaded drain valve until clear fuel is flowing from the valve.

The particles or water will drain out first. See "Engine Oil" in the Index for proper disposal procedures.

Automatic Ether Injection System (If Equipped)

If you have a Caterpillar diesel engine, you may have this feature. The ether cylinder is located in the engine compartment on the driver's side of the vehicle.

To change an empty ether cylinder, follow these steps.

1. Loosen the screw head on the cylinder-to-bracket clamp.
2. Spread the clamp apart.
3. Clean any dirt from the neck of the cylinder and the top of the valve before you take out the cylinder.
4. Check the inside of the valve for any foreign matter. Clean the valve as necessary.
5. Cover the valve to protect it from dirt and take out the cylinder.
6. Install a new gasket whenever you take out the cylinder. Use only one gasket and spread a light film of clean oil on it before installation.
7. Put in the new cylinder. Turn it clockwise until it just starts to contact the gasket.
8. Tighten the cylinder another half turn (180 degrees). Don't over-tighten.
9. Retighten the cylinder clamp.

Front Wheel Bearings with Oil-Filled Hubs

If your vehicle has oil-filled hubs, occasionally check to see if they have enough oil. You can tell if there is oil there by using the circular gage on the sight glass.

If there isn't, clean the rubber fill plug in the center of the glass, and then remove it. Be careful not to allow any dirt or water to get into the oil. Add enough of the recommended oil to bring it up to the level mark that you'll see on the glass.

Refer to your Maintenance Schedule for the proper oil to use.

When you fill the hub, check the glass again after driving a short distance. It takes a while for the oil to flow through the system, and you may find that you have to add a little more to fill it to the proper level. Be sure not to overfill the hub.

Air Conditioning System

Every now and then, have your dealership check your air conditioning system to be sure it has not lost any cooling ability. If you think the system is not working properly, have your GM dealer check it out as soon as possible.

Tires

Your new vehicle comes with high-quality tires made by a leading tire manufacturer. If you ever have questions about your tire warranty and where to obtain service, see your General Motors Warranty booklet for details.

⚠ CAUTION:

Poorly maintained and improperly used tires are dangerous.

- **Overloading your tires can cause overheating as a result of too much friction. You could have an air-out and a serious accident. See "Loading Your Vehicle" in the Index.**

CAUTION: (Continued)

CAUTION: (Continued)

- **Underinflated tires pose the same danger as overloaded tires. The resulting accident could cause serious injury. Check all tires frequently to maintain the recommended pressure. Tire pressure should be checked when your tires are cold.**
- **Overinflated tires are more likely to be cut, punctured or broken by a sudden impact -- such as when you hit a pothole. Keep tires at the recommended pressure.**
- **Worn, old tires can cause accidents. If your tread is badly worn, or if your tires have been damaged, replace them.**

Inflation -- Tire Pressure

The GVW Rating label, which is on the driver's door, shows the correct inflation pressures for your tires when they're cold. "Cold" means your vehicle has been sitting for at least three hours or driven no more than 1 mile (1.6 km).

NOTICE:

Don't let anyone tell you that underinflation or overinflation is all right. It's not. If your tires don't have enough air (underinflation), you can get the following:

- **Too much flexing**
- **Too much heat**
- **Tire overloading**
- **Bad wear**
- **Bad handling**
- **Bad fuel economy**

NOTICE: (Continued)

NOTICE: (Continued)

If your tires have too much air (overinflation), you can get the following:

- **Unusual wear**
- **Bad handling**
- **Rough ride**
- **Needless damage from road hazards**

When to Check

Check your tires once a month or more. Also, check the tire pressure of the spare tire (if equipped).

How to Check

Use a good quality pocket-type gage to check tire pressure. You can't tell if your tires are properly inflated simply by looking at them. Radial tires may look properly inflated even when they're underinflated.

Be sure to put the valve caps back on the valve stems. They help prevent leaks by keeping out dirt and moisture.

Rims and Wheels

Rims and wheels are stamped with a maximum load and cold inflation rating. Be sure you don't exceed these limits.

Dual Tire Operation

When the vehicle is new, check the wheel nut tightness on all wheels with a torque wrench after your first 100 miles (160 km) and then 1,000 miles (1 600 km) after that. Whenever a wheel, wheel bolt or wheel nut is removed or serviced, repeat the 100 miles (160 km), and then 1,000 mile (1 600 km) wheel nut tightness check.

See "Tightening the Wheel Nuts" later in this section for proper torque values and wheel nut tightening information.

⚠ CAUTION:

If you operate your vehicle with a tire that is badly underinflated, the tire can overheat. An overheated tire can lose air suddenly or catch fire. You or others could be injured. Be sure all tires (including the spare, if any) are properly inflated.

See "Tires" and "Inflation -- Tire Pressure" in the Index for more information on proper tire inflation.

When It's Time for New Tires

Replace your tires when the tread depth is down to 1/8 of an inch (3.2 mm) for the front tires, or 1/16 of an inch (1.6 mm) for a rear tire. Also, you need a new tire if:

- You can see cord or fabric showing through the tire's rubber.
- The tread or sidewall is cracked, cut or snagged deep enough to show cord or fabric.
- The tire has a bump, bulge or split.
- The tire has a puncture, cut or other damage that can't be repaired well because of the size or location of the damage.

⚠ CAUTION:

Mixing tires could cause you to lose control while driving. If you mix tires of different types -- like radial and bias-belted tires -- the vehicle may not handle properly, and you could have a crash. Be sure to use the same type of tires all around.

When you replace tires, make sure they are the same size, load range, speed rating and construction type (bias, bias-belted or radial) as your original tires.

Wheel Alignment and Tire Balance

The wheels on your vehicle were aligned at the factory to give you the longest tire life and best overall performance.

Proper front wheel alignment must be maintained in order to ensure efficient steering, good directional stability, and prevent abnormal tire wear. If you notice unusual tire wear or your vehicle is pulling one way or the other, the alignment may need to be reset. If you notice your vehicle vibrating when driving on a smooth road, your wheels may need to be balanced.

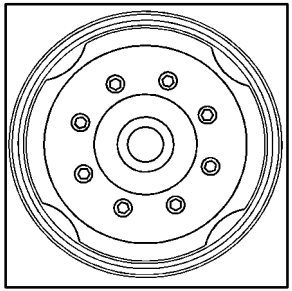
Tightening the Wheel Nuts

⚠ CAUTION:

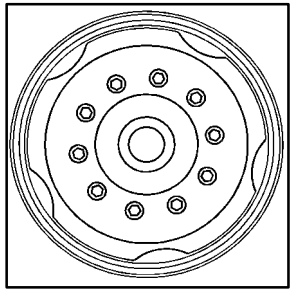
Wheel nuts that are not tight can work loose. If all the nuts on a wheel come off, the wheel can come off the vehicle, causing a crash. All wheel nuts must be properly tightened. Follow the rules in this section to be sure they are.

This section lets you know how often to check the tightness of the wheel nuts on your vehicle and how tight they must be.

First, use these pictures to decide what kind of wheels you have.



Hub-Piloted Type, 8-Hole



Hub-Piloted Type, 10-Hole

Then, follow the steps below for the wheels you have.

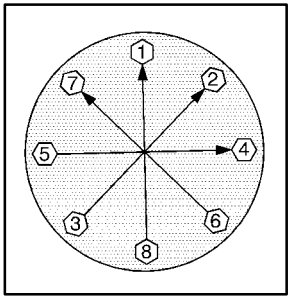
⚠ CAUTION:

Never use oil or grease on studs or the threads of the wheel nuts. If you do, the nuts might come loose. Your wheel could fall off, causing a crash.

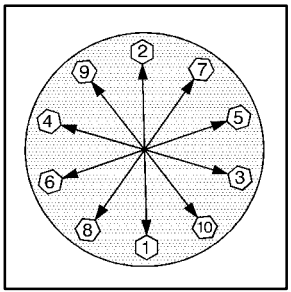
Hub-Piloted Wheels, 8-Hole or 10-Hole

The studs and nuts used with these wheels have right-hand threads.

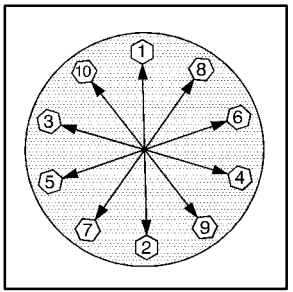
1. With intermittent pilot pads, position a pad at 12 o'clock to center the wheel and reduce run-out.
2. Put the tire and rim assembly on the axle hub. Install the outer rear tire and rim assembly so that its valve stem is exactly opposite the valve stem on the inner tire and rim assembly.
3. Put on the wheel nuts.
4. Finger-tighten the nuts.
5. Oil the surfaces between the nuts and washers. Do not oil the studs or the threads of the nut.
6. Tighten the nuts to 400 lb-ft (542 N·m) if an 8-hole stud or 480 lb-ft (650 N·m) if a 10-hole stud. Use the following diagrams.



8-Hole



10-Hole (Front or Inner Dual Wheel)



10-Hole (Outer Dual Wheel)

⚠ CAUTION:

If wheel studs are damaged, they can break. If all the studs on a wheel broke, the wheel could come off and cause a crash. If any stud is damaged because of a loose-running wheel, it could be that all of the studs are damaged. To be sure, replace all studs on the wheel. If the stud holes in a wheel have become larger, the wheel could collapse in operation. Replace any wheel if its stud holes have become larger or distorted in any way. Inspect hubs and hub piloted wheels for damage. Because of loose running wheels, piloting pad damage may occur and require replacement of the entire hub, for proper centering of the wheels. When replacing studs, hubs, nuts or wheels, be sure to use GM original equipment parts.

⚠ CAUTION:

Rust or dirt on a wheel, or on the parts to which it is fastened, can make the wheel nuts become loose after a time. The wheel could come off and cause a crash. When you change a wheel, remove any rust or dirt from the places where the wheel attaches to the vehicle. In an emergency, you can use a cloth or paper towel to do this; but be sure to use a scraper or wire brush later, if you need to, to get all the rust or dirt off.

How Often to Check

Wheel tightness is so important you should have a technician check nut tightness on all wheels with a torque wrench after your first 100 miles (160 km), and then 1,000 miles (1 600 km) after that. Be sure to repeat this service whenever you have a tire removed or serviced. See “Maintenance Schedule” in the Index for further information.

Wheel Replacement

Replace any wheel that is bent, cracked or badly rusted. If wheel nuts keep coming loose, replace the wheel. If the wheel leaks air, replace it.

Your dealer will know the kind of wheel you need.

⚠ CAUTION:

A leaking wheel could fail without warning. A wheel designed for tubeless tires could be leaking because it is damaged. Don't use an inner tube or some other thing to try to stop the leaking. Get a new wheel of the proper type.

⚠ CAUTION:

Without the correct wheel, you may not be able to stop properly, and you could have other problems like a tire air-out. You could have a collision. If you don't go to your dealer to get a new wheel, be sure you get the correct one. Each new wheel should match the original wheel in load-carrying capacity, inflation pressure capacity, diameter, width, offset and mounting configuration.

Using wheels and tires with higher load-carrying limits than the original wheels and tires doesn't change the GAWR or the GVWR of your vehicle.

NOTICE:

The wrong wheel can cause trouble in bearing life, brake cooling, speedometer/odometer calibration, headlamp aim, bumper height, vehicle ground clearance, stopping distance and tire clearance to the body and chassis. You could also have other problems like a tire air-out.

Used Replacement Wheels

⚠ CAUTION:

Putting a used wheel on your vehicle is dangerous. You can't know how it's been used or how many miles it's been driven. It could fail suddenly and cause an accident. If you have to replace a wheel, use a new GM original equipment wheel.

Appearance Care

Remember, cleaning products can be hazardous. Some are toxic. Others can burst into flame if you strike a match or get them on a hot part of the vehicle. Some are dangerous if you breathe their fumes in a closed space. When you use anything from a container to clean your vehicle, be sure to follow the manufacturer's warnings and instructions. And always open your doors or windows when you're cleaning the inside.

Never use these to clean your vehicle:

- Gasoline
- Benzene
- Naphtha
- Carbon Tetrachloride
- Acetone
- Paint Thinner
- Turpentine
- Lacquer Thinner
- Nail Polish Remover

They can all be hazardous -- some more than others -- and they can all damage your vehicle, too.

Don’t use any of these unless this manual says you can. In many uses, these will damage your vehicle:

- Alcohol
- Laundry Soap
- Bleach
- Reducing Agents

Cleaning the Inside of Your Vehicle

Use a vacuum cleaner often to get rid of dust and loose dirt. Wipe vinyl, leather, plastic and painted surfaces with a clean, damp cloth.

Cleaning of Fabric/Carpet

Your dealer has cleaners for the cleaning of fabric and carpet. They will clean normal spots and stains very well. You can get GM-approved cleaning products from your dealer. See “Appearance Care and Materials” in the Index.

Here are some cleaning tips:

- Always read the instructions on the cleaner label.
- Clean up stains as soon as you can -- before they set.
- Carefully scrape off any excess stain.
- Use a clean cloth or sponge, and change to a clean area often. A soft brush may be used if stains are stubborn.
- If a ring forms on fabric after spot cleaning, clean the entire area immediately or it will set.

Using Cleaner on Fabric

1. Vacuum and brush the area to remove any loose dirt.
2. Always clean a whole trim panel or section. Mask surrounding trim along stitch or welt lines.
3. Follow the directions on the container label.
4. Apply cleaner with a clean sponge. Don’t saturate the material and don’t rub it roughly.
5. As soon as you’ve cleaned the section, use a sponge to remove any excess cleaner.
6. Wipe cleaned area with a clean, water-dampened towel or cloth.
7. Wipe with a clean cloth and let dry.

Special Fabric Cleaning Problems

Stains caused by such things as catsup, coffee (black), egg, fruit, fruit juice, milk, soft drinks, vomit, urine and blood can be removed as follows:

1. Carefully scrape off excess stain, then sponge the soiled area with cool water.
2. If a stain remains, follow the cleaner instructions described earlier.
3. If an odor lingers after cleaning vomit or urine, treat the area with a water/baking soda solution: 1 teaspoon (5 ml) of baking soda to 1 cup (250 ml) of lukewarm water.
4. Let dry.

Stains caused by candy, ice cream, mayonnaise, chili sauce and unknown stains can be removed as follows:

1. Carefully scrape off excess stain.
2. First, clean with cool water and allow to dry completely.
3. If a stain remains, follow the cleaner instructions described earlier.

Cleaning Vinyl

Use warm water and a clean cloth.

- Rub with a clean, damp cloth to remove dirt. You may have to do it more than once.
- Things like tar, asphalt and shoe polish will stain if you don't get them off quickly. Use a clean cloth and a vinyl/leather cleaner. See your dealer for this product.

Cleaning the Top of the Instrument Panel

Use only mild soap and water to clean the top surfaces of the instrument panel. Sprays containing silicones or waxes may cause annoying reflections in the windshield and even make it difficult to see through the windshield under certain conditions.

Cleaning Interior Plastic Components

Use only a mild soap and water solution on a soft cloth or sponge. Commercial cleaners may affect the surface finish.

Care of Safety Belts

Keep belts clean and dry.

⚠ CAUTION:

Do not bleach or dye safety belts. If you do, it may severely weaken them. In a crash, they might not be able to provide adequate protection. Clean safety belts only with mild soap and lukewarm water.

Cleaning Glass Surfaces

Glass should be cleaned often. GM Glass Cleaner or a liquid household glass cleaner will remove normal tobacco smoke and dust films on interior glass. See “Appearance Care and Materials” in the Index.

NOTICE:

Don’t use abrasive cleaners on glass, because they may cause scratches. Avoid placing decals on the inside rear window, since they may have to be scraped off later.

Cleaning the Outside of the Windshield and Wiper Blades

If the windshield is not clear after using the windshield washer, or if the wiper blade chatters when running, wax, sap or other material may be on the blade or windshield.

Clean the outside of the windshield with a full-strength glass cleaning liquid. The windshield is clean if beads do not form when you rinse it with water.

Grime from the windshield will stick to the wiper blades and affect their performance. Clean the blade by wiping vigorously with a cloth soaked in full-strength windshield washer solvent. Then rinse the blade with water.

Check the wiper blades and clean them as necessary; replace blades that look worn.

Weatherstrips

Silicone grease on weatherstrips will make them last longer, seal better, and not stick or squeak. Apply silicone grease with a clean cloth at least every six months. During very cold, damp weather more frequent application may be required. See “Recommended Fluids and Lubricants” in the Index.

Cleaning the Outside of Your Vehicle

The paint finish on your vehicle provides beauty, depth of color, gloss retention and durability.

Washing Your Vehicle

The best way to preserve your vehicle’s finish is to keep it clean by washing it often with lukewarm or cold water.

Don’t wash your vehicle in the direct rays of the sun. Use a vehicle washing soap. Don’t use strong soaps or chemical detergents. Be sure to rinse the vehicle well, removing all soap residue completely. You can get GM-approved cleaning products from your dealer. See “Appearance Care and Materials” in the Index. Don’t use cleaning agents that are petroleum based, or that contain acid or abrasives. All cleaning agents should be flushed promptly and not allowed to dry on the surface, or they could stain. Dry the finish with a soft, clean chamois or an all-cotton towel to avoid surface scratches and water spotting.

High pressure vehicle washes may cause water to enter your vehicle.

Cleaning Exterior Lamps/Lenses

Use only lukewarm or cold water, a soft cloth and a vehicle washing soap to clean exterior lamps and lenses. Follow instructions under “Washing Your Vehicle.”

Finish Care

Occasional waxing or mild polishing of your vehicle by hand may be necessary to remove residue from the paint finish. You can get GM-approved cleaning products from your dealer. See “Appearance Care and Materials” in the Index.

Your vehicle may have “basecoat/clearcoat” paint finish. The clearcoat gives more depth and gloss to the colored basecoat. Always use waxes and polishes that are non-abrasive and made for a basecoat/clearcoat paint finish.

NOTICE:

Machine compounding or aggressive polishing on a basecoat/clearcoat paint finish may dull the finish or leave swirl marks.

Foreign materials such as calcium chloride and other salts, ice melting agents, road oil and tar, tree sap, bird droppings, chemicals from industrial chimneys, etc., can damage your vehicle’s finish if they remain on painted surfaces. Wash the vehicle as soon as possible. If necessary, use non-abrasive cleaners that are marked safe for painted surfaces to remove foreign matter.

Exterior painted surfaces are subject to aging, weather and chemical fallout that can take their toll over a period of years. You can help to keep the paint finish looking new by keeping your vehicle garaged or covered whenever possible.

Protecting Exterior Bright Metal Parts

Bright metal parts should be cleaned regularly to keep their luster. Washing with water is all that is usually needed. However, you may use chrome polish on chrome or stainless steel trim, if necessary.

Use special care with aluminum trim. To avoid damaging protective trim, never use auto or chrome polish, steam or caustic soap to clean aluminum. A coating of wax, rubbed to high polish, is recommended for all bright metal parts.

Cleaning Aluminum or Chrome-Plated Wheels (If Equipped)

Keep your wheels clean using a soft clean cloth with mild soap and water. Rinse with clean water. After rinsing thoroughly, dry with a soft clean towel. A wax may then be applied.

The surface of these wheels is similar to the painted surface of your vehicle. Don't use strong soaps, chemicals, abrasive polishes, abrasive cleaners, cleaners with acid or abrasive cleaning brushes on them because you could damage the surface. Do not use chrome polish on aluminum wheels.

Use chrome polish only on chrome-plated wheels, but avoid any painted surface of the wheel, and buff off immediately after application.

Don't take your vehicle through an automatic vehicle wash that has silicon carbide tire cleaning brushes. These brushes can also damage the surface of these wheels.

Cleaning Tires

To clean your tires, use a stiff brush with a tire cleaner.

NOTICE:

When applying a tire dressing always take care to wipe off any overspray or splash from all painted surfaces on the body or wheels of the vehicle. Petroleum-based products may damage the paint finish and tires.

Sheet Metal Damage

If your vehicle is damaged and requires sheet metal repair or replacement, make sure the body repair shop applies anti-corrosion material to the parts repaired or replaced to restore corrosion protection.

Original manufacturer replacement parts will provide the corrosion protection while maintaining the warranty.

Finish Damage

Any stone chips, fractures or deep scratches in the finish should be repaired right away. Bare metal will corrode quickly and may develop into a major repair expense.

Minor chips and scratches can be repaired with touch-up materials available from your dealer or other service outlets. Larger areas of finish damage can be corrected in your dealer's body and paint shop.

Underbody Maintenance

Chemicals used for ice and snow removal and dust control can collect on the underbody. If these are not removed, accelerated corrosion (rust) can occur on the underbody parts such as fuel lines, frame, floor pan and exhaust system even though they have corrosion protection.

At least every spring, flush these materials from the underbody with plain water. Clean any areas where mud and other debris can collect. Dirt packed in closed areas of the frame should be loosened before being flushed. Your dealer or an underbody vehicle washing system can do this for you.

GM Vehicle Care/Appearance Materials

PART NUMBER	SIZE	DESCRIPTION	USAGE
994954	23 in. x 25 in.	Polishing Cloth – Wax Treated	Exterior polishing cloth.
1050172	16 oz. (0.473 L)	Tar and Road Oil Remover	Removes tar, road oil and asphalt.
1050173	16 oz. (0.473 L)	Chrome Cleaner and Polish	Use on chrome or stainless steel.
1050174	16 oz. (0.473 L)	White Sidewall Tire Cleaner	Removes soil and black marks from whitewalls.
1050214	32 oz. (0.946 L)	Vinyl Cleaner	Cleans vinyl tops, upholstery and convertible tops.
1050427	23 oz. (0.680 L)	Glass Cleaner	Removes dirt, grime, smoke and fingerprints.
1052929	16 oz. (0.473 L)	Chrome and Wire Wheel Cleaner	Removes dirt and grime from chrome wheels and wire wheel covers.
12377964	16 oz. (0.473 L)	Finish Enhancer	Removes dust, fingerprints and surface contaminants. Spray on wipe off.
12377965	16 oz. (0.473 L)	Swirl Remover Polish	Removes swirl marks, fine scratches and other light surface contamination.
12377966	16 oz. (0.473 L)	Cleaner Wax	Removes light scratches and oxidation and protects finish.
12378188	15 oz. (0.443 L)	Foaming Tire Shine–Low Gloss	Cleans, shines and protects in one easy step. No wiping necessary.
12378401	16 oz. (0.473 L)	Wash Wax Concentrate	Medium foaming shampoo. Cleans and lightly waxes. Biodegradable and phosphate free.
12378488	8 oz. (0.237 L)	Spot Lifter	Quickly and easily removes spots and stains from carpets, vinyl and cloth upholstery.

See your General Motors parts department for these products.
See "Recommended Fluids and Lubricants" in the Index.

Vehicle Identification Number (VIN)

This is the legal identifier for your vehicle. It appears on a plate in the front corner of the instrument panel, on the driver's side. You can see it if you look through the windshield from outside your vehicle. The VIN also appears on the Vehicle Certification and Service Parts labels and the certificates of title and registration.

Engine Identification

The 8th character in your VIN is the engine code. This code will help you identify your engine, specifications and replacement parts.

Service Statement

One of these statements is on your GVW Rating label. Here is what each one means.

TRUCK SERVICE -- A vehicle made to carry property or special equipment. It is made for uniform frame loading. That includes using the vehicle to pull a full trailer.

TRUCK-TRACTOR -- A vehicle made to draw other vehicles. It's made to carry part of the load of the trailer. It is made for point frame loading, usually for a semi-trailer ("fifth wheel").

MAX. VERT. CG -- The highest allowable vertical center of gravity, at the highest allowable GVWR. It's measured from level ground in inches.

TRUCK-CANADA -- A vehicle first sold in Canada with a non-school bus application, or cab models with regular production option RQ2 ("truck service").

TRACTOR-CANADA -- A cab model with regular production option RQ3 ("truck-tractor service").

Service Parts Identification Label

You'll find this label in a location determined by the body manufacturer. It's very helpful if you ever need to order parts. On this label is:

- your VIN,
- the model designation,
- paint information and
- a list of all production options and special equipment.

Be sure that this label is not removed from the vehicle.

Electrical System

Add-On Electrical Equipment

NOTICE:

Don't add anything electrical to your vehicle unless you check with your dealer first. Some electrical equipment can damage your vehicle and the damage wouldn't be covered by your warranty. Some add-on electrical equipment can keep other components from working as they should.

Headlamp Wiring

The headlamp wiring is protected by a circuit breaker in the light switch. An electrical overload will cause the lights to go on and off, or in some cases to remain off. If this happens, have your headlamp wiring checked right away.

Windshield Wiper Fuses

The windshield wiper motor is protected by a circuit breaker inside the motor and a circuit breaker or fuse in the fuse block. If the motor overheats, the wipers will stop until the motor cools. If the overload is caused by an electrical problem, be sure to get it fixed.

Fusible Links

A fusible link is a short piece of wire several gauge sizes smaller than the circuit it protects. It will melt in an overload situation, opening the circuit.

Your starter and other circuits have these fusible links. The size is printed on the insulation. If the insulation is burned beyond recognition, consult your GM dealer for the proper size. Replace a fusible link with one of the same size and insulation type. Fusible link insulation is a special purpose high-temperature material.

The hydraulic brake booster motor feed circuit and starter circuit are protected by a fusible link. Vehicles with a diesel engine have a fusible link for the intake heater feed circuit.

Power Windows and Other Power Options

Circuit breakers in the fuse panel protect the power windows and other power accessories. When the current load is too heavy, the circuit breaker opens. This protects the circuit until the current load returns to normal or the problem is fixed.

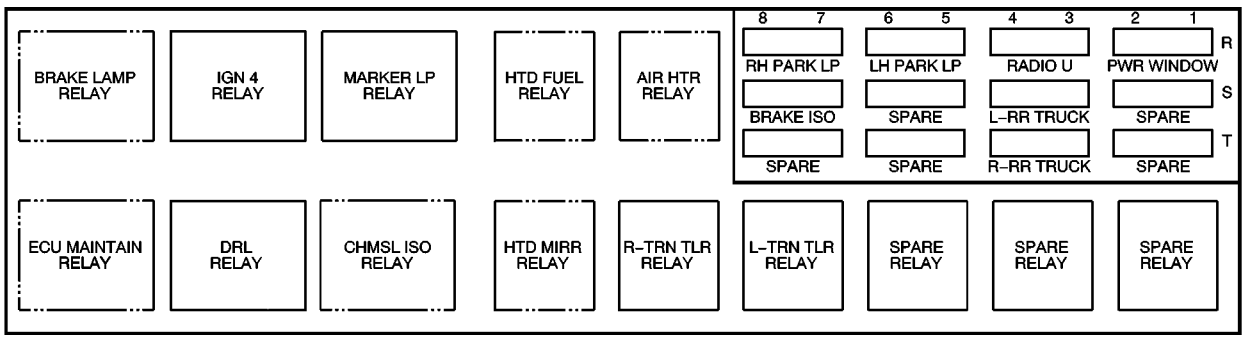
Fuses and Circuit Breakers

The wiring circuits in your vehicle are protected from short circuits by a combination of fuses, circuit breakers, maxi-fuses and fusible links. This greatly reduces the chance of a fire caused by an electrical problem. There may be a fuse taped to the wiring harness near the hydraulic brake booster.

Instrument Panel Fuse Block

There are two instrument panel fuse blocks located behind the instrument panel on the passenger's side of the vehicle.

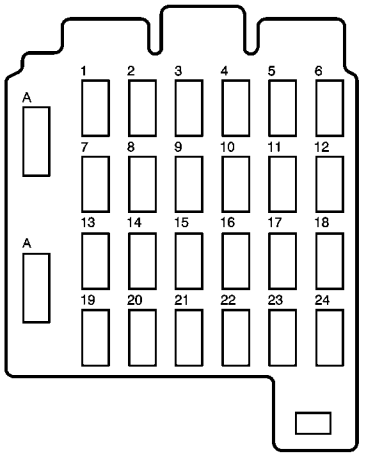
Be sure to replace fuses with fuses of the same rating. Do not use fuses of higher amperage than those indicated on the fuse block.



Fuse Block 1

Fuse	Usage
RH PARK LP	Right-hand Parking Lamps
LH PARK LP	Left-hand Parking Lamps
RADIO U	Radio
PWR WINDOW	Power Windows
BRAKE ISO	Brake Warning Lamp
SPARE	Spare Fuse
L-RR TRUCK	Left Rear Trailer Wiring
SPARE	Spare Fuse
SPARE	Spare Fuse
SPARE	Spare Fuse
R-RR TRUCK	Right Rear Trailer Wiring
SPARE	Spare Fuse

Relay	Usage
BRAKE LAMP	C4/C5 Brake Lamps, C6/C7/C8 Tractor/Trailer Wiring
IGN 4	Ignition
MARKER LP	Sidemarker and Clearance Lamps
HTD FUEL	LB7/LG4 Heated Fuel
AIR HTR	LG4 Air Heater
ECU MAINTAIN	LG4 Electronic Control Unit
DRL	Daytime Running Lamps
CHMSL ISO	Center High Mounted Stop Lamp
HTD MIRR	Heated Mirrors
R-TRN TLR	Right Trailer Turn Signal
L-TRN TLR	Left Trailer Turn Signal
SPARE	Spare Relay
SPARE	Spare Relay
SPARE	Spare Relay



Fuse Block 2

Circuit Breaker	Usage
1	Stoplamps
2	Center High Mounted Stop Lamp
3	Parking Lamps
4	Powertrain Control Module
5	Auxiliary Wiring
6	Heater/Air Conditioning
7	Hazard Warning Flashers
8	Power Post
9	Courtesy Lamps
10	Warning Lights, Gages and Indicators
11	Crank
12	Rear Axle
13	Trailer Turn Signals/Hazard Warning Flashers
14	Radio/Chime
15	Daytime Running Lamps
16	Air Bag System
17	Exterior/Interior Lamps
18	Parking Brake
19	Accessory Power
20	Ignition
21	Sidemarker Lamps
22	Turn Signal/Backup Lamps
23	Transmission
24	Chassis
A	Spare
B	Spare

Underhood Fuse Block

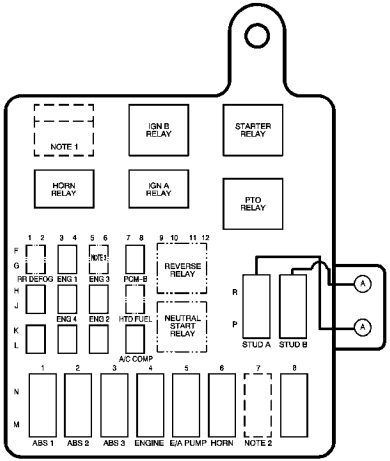
When a circuit goes out, the problem could be in either the primary or secondary underhood fuse blocks. These blocks uses blade-type fuses.

Both underhood fuse blocks are located in the engine compartment, on the passenger's side of the vehicle.

Primary Underhood Fuse Block

To access the fuse blocks, gently squeeze both sides of the cover to unlatch the tabs at the top. Then, unsnap both attachments at the bottom and remove the cover.

Be sure to replace fuses with fuses of the same rating. Do not use fuses of higher amperage than those indicated on the fuse block.

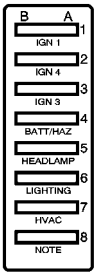


Primary Underhood Fuse Block

Relay	Usage
NOTE 1	LG4 Powertrain Control Valve, L18/LB7 Fuel Pump, LG5 Heated Fuel
IGN B	Ignition
STARTER	Starter
HORN	Horn
IGN A	Ignition
PTO	Power Take-Off
REVERSE	Reverse
NEUTRAL START	Neutral Start

Fuse	Usage
RR DEFOG	Rear Defog
ENG 1	Engine 1
ENG 3	Engine 3
PCM-B	Powertrain Control Module
BLANK	Empty
ENG 4	Engine 4
ENG 2	Engine 2
HTD FUEL	Heated Fuel
BLANK	Empty
BLANK	Empty

Fuse	Usage
BLANK	Empty
A/C COMP	Air Conditioning Compressor
ABS 1	Anti-Lock Brake System 1
ABS 2	Anti-Lock Brake System 2
ABS 3	Anti-Lock Brake System 3
ENGINE	Engine
E/A PUMP	Electronic/Automatic Pump
HORN	Horn
NOTE 2	L18/LB7 Fuel, LG4 Powertrain Control Valve, LG5 Electronic Control Module
BLANK	Empty
STUD A	Spare
STUD B	Spare



Secondary Underhood Fuse Block

Fuse	Usage
IGN 1	Ignition 1
IGN 4	Ignition 4
IGN 3	Ignition 3
BATT/HAZ	Battery/Hazard Warning Flashers
HEADLAMP	Headlamps
LIGHTING	Interior/Exterior Lamps
HVAC	Comfort Control System
NOTE	C4/C5 Electric Brake, C6/C7/C8 Brake Lamps

Replacement Bulbs

It is recommended that you use an ACDelco® type bulb whenever you need to replace one.

If you need a bulb replaced, contact your dealer.

Capacities and Specifications

Engine Specifications

Engine RPO	LG5	L18	LG4	LB7
Engine Type	7.2L L6	8.1L V8	7.8L L6	6.6L V8
Fuel System	HEUI	SPFI	Common Rail	Common Rail
Firing Order	1-5-3-6-2-4	1-8-7-2-6-5-4-3	1-5-3-6-2-4	1-2-7-8-4-5-6-3

Cooling System Capacity

The following approximate capacities are given in English and metric conversions.

Please refer to “Recommended Fluids and Lubricants” in the Index for more information.

C4/C5 Models	**Quarts (Liters)**
8.1L with manual transmission	30.1 (28.5)
8.1L with automatic transmission	29.8 (28.2)
6.6L with manual transmission	27.6 (26.1)
6.6L with automatic transmission	27.3 (25.8)
C6/C7/C8 Models	**Quarts (Liters)**
8.1L with manual transmission	33.3 (31.5)
8.1L with manual transmission, air conditioning and increased cooling	34.9 (33.0)
8.1L with automatic transmission	32.5 (30.8)
7.8L 200-230 hp engine with manual transmission	31.6 (29.9)
7.8L 200-230 hp engine with manual transmission, air conditioning and increased cooling	35.3 (33.4)
C6/C7/C8 Models	**Quarts (Liters)**
7.8L 200-215 hp engine with automatic transmission	33.7 (31.9)
7.2L 175-230 hp engine with manual transmission	29.3 (27.7)
7.2L 175-230 hp engine with manual transmission, air conditioning and increased cooling	33.0 (31.2)
7.2L 175-210 hp engine with automatic transmission	31.4 (29.7)
7.8L 250-275 hp engine with manual transmission	34.9 (33.0)
7.8L 250-275 hp engine with manual transmission, air conditioning and increased cooling	35.4 (33.5)
7.8L 230-275 hp engine with automatic transmission	33.3 (31.5)
7.2L 250-300 hp engine with manual transmission	32.8 (31.0)
7.2L 250-300 hp engine with manual transmission, air conditioning and increased cooling	33.3 (31.5)
7.2L 250-300 hp engine with automatic transmission	31.2 (29.5)

Engine Oil with Filter Capacity

Engine	Quarts (Liters)
7.2L**	30.0 (28.4)*
8.1L**	6.5 (6.1)
7.8L**	23.8 (22.5)
6.6L**	14.6 (13.8)

*Additional oil is required with auxiliary oil filter systems. Make sure to add enough extra oil to fill the auxiliary oil filter system. For vehicles equipped with the LUBERFINER 750-C, add 14 quarts (13.25 L).

** Check fill level on the oil indicator after initial fill to make sure it is actually full. Oil level may vary depending on vehicle option content.

Fuel Tank Capacity

C4/C5 Models	**Gallons (Liters)**
Standard*	41 (155.2)
Optional	40 (151.4)
Optional	60 (227.1)
Optional	80 (302.8)
C6/C7/C8 Models	**Gallons (Liters)**
Standard	50 (189.2)
Optional	35 (132.4)
Optional	50 (189.2)
Optional†	70 (264.8)
Optional✓	75 (283.8)
Optional&	100 (378.5)

* One 25-gallon (94.6 L) tank and one 16-gallon (60.6 L) tank
†Two 35-gallon (132.4 L) tanks
✓One 25-gallon (94.6 L) tank and One 50-gallon (189.2 L) tank
&Two 50-gallon (189.2 L) tanks

Transmission Capacity

For manual transmissions, the correct oil level is to the bottom of the fluid fill plug opening. The oil capacity will vary, due to the angle of the transmission, with the vehicle. For automatic transmissions, see the Allison Automatic Transmission Operator's Manual for oil check and maintenance information.

Manual Transmission	**Pints (Liters)**
ZF S6-650	12.7 (6.0)
RT6609	12.5 (5.9)
RT8709B	25.1 (11.8)
FS4205A, FS4205B, FS4205C	11.1 (5.3)
FS5205A, FS5205C	11.6 (5.5)
FS5406	18.4 (8.7)
FS6305A, FS6305B	18.4 (8.7)
FS6406	18.4 (8.7)
FS8406	18.5 (8.8)
RT8908LL	29.1 (13.8)

Automatic Transmission	**Pints (Liters)**
MD 3060 P	52.0 (24.6)*
MD 3560 P	52.0 (24.6)*
1000 Series	16.0 (8.9)*
2000 Series	35.0 (13.5)*
2200 Series	35.0 (13.5)*
2400 Series	35.0 (13.5)*

*Add two pints (one liter) when changing spin-on or remote filter.

Rear Axle Lubricant Capacity

Single Speed Axle	**Pints (Liters)**
80	10.0 (4.7)
S135	26.0 (12.3)
19060S	31.0 (14.7)
21060D	31.0 (14.7)
21060S	31.0 (14.7)
S150	28.0 (13.0)
23090S	40.0 (19.0)
23105S	56.0 (26.5)
26105S	54.0 (25.5)
Two-Speed Axle	**Pints (Liters)**
19060T	38.0 (18.0)
21060T	38.0 (18.0)
23082T	40.0 (19.0)
26080T	44.0 (20.8)
Tandem Axles	**Pints (Liters)**
DS344 (front)	32.0 (15.1)
RS344 (rear)	31.0 (14.7)
DSH44 (front)	32.0 (15.1)
RSH44 (rear)	31.0 (14.7)
DS404, DS404P (front)	32.0 (15.1)
RS404 (rear)	31.0 (14.7)

Air Conditioning Refrigerant Capacity

If you do your own service work, you'll need the proper service manual. See "Doing Your Own Service Work" in the Index for additional information. It is recommended that service work on your air conditioning system be performed by a qualified technician.

Air Conditioning Refrigerant
R134a ..... 2.1 lbs. (1.0 kg)

Use Refrigerant Oil, R143a Systems

Normal Maintenance Replacement Parts

Allison Transmission External Filters

See the Allison Transmission Operator's Manual in your vehicle for external filter part numbers and information.

Air Compressor Filter

Air Compressor	**Part Number**
Bendix Tu-Flo 550 (13.2 CFM)	2467368

Service Replacement Part and Filter Recommendations

Engine	**7.2L**	**8.1L**	**7.8L**	**6.6L**
RPO	LG5	L18	LG4	LB7
Spark Plug		ACDelco® 41-983		
Gap		0.060 inch (1.52 mm)		
Torque		14.75 lb. ft. (20.0 Nm)		
Oil Filter	CAT® 1R0739	ACDelco® PF454	GM Part No. 94392475	ACDelco® PF1218
Air Cleaner	Donaldson P522606	ACDelco® A1518C	C4/C5 Models: GM Part No. 88937527 C6/C7/C8 Models: GM Part No. 88937548***	C4/C5 Models: GM Part No. 88937527 C6/C7/C8 Models: GM Part No. 88937548***
Fuel Filter	ACDelco® 915 Primary**	ACDelco® GF626*	GM Part No. 94392474	GM Part No. 97256734

Engine	**7.2L**	**8.1L**	**7.8L**	**6.6L**
Power Steering Fluid Filter	GM Part No. 88892858	GM Part No. 88892858	GM Part No. 88892858	GM Part No. 88892858
Secondary Fuel Filter	CAT® 1R0751	GM Part No. 25055052	GM Part No. 15098649	
Pressure Caps	RC-54	GM Part No. 15997145	GM Part No. 15075118	GM Part No. 15075118

*Optional Davco (K28) D350921 spin-on type filter located on driver's side frame rail.

**Optional Cold Weather (KUK) Racor B6484GM spin-on type filter located on driver's side frame rail.

*** Optional air filter (GM Part No. 88937525) for C6/C7/C8 Models. Fits inside standard size filter (GM Part No. 88937548) listed previously.

Section 7 Maintenance Schedule

This section covers the maintenance required for your vehicle. Your vehicle needs these services to retain its safety, dependability and emission control performance.

7-2 Introduction
7-4 Part A: Scheduled Maintenance Services
7-5 Scheduled Maintenance
7-21 Part B: Owner Checks and Services
7-27 Part C: Recommended Fluids and Lubricants
7-30 Part D: Maintenance Record

IMPORTANT:
KEEP ENGINE OIL
AT THE PROPER
LEVEL AND CHANGE AS
RECOMMENDED

GM Protection Plan

Have you purchased the GM Protection Plan? The Plan supplements your new vehicle warranties. See your Warranty and Owner Assistance booklet or your dealer for details.

Introduction

Your Vehicle and the Environment

Proper vehicle maintenance not only helps to keep your vehicle in good working condition, but also helps the environment. All recommended maintenance procedures are important. Improper vehicle maintenance can even affect the quality of the air we breathe. Improper fluid levels or the wrong tire inflation can increase the level of emissions from your vehicle. To help protect our environment, and to keep your vehicle in good condition, please maintain your vehicle properly.

Maintenance Requirements

Maintenance intervals, checks, inspections and recommended fluids and lubricants as prescribed in this manual are necessary to keep your vehicle in good working condition. Any damage caused by failure to follow recommended maintenance may not be covered by warranty.

How This Section is Organized

This maintenance schedule is divided into four parts:

“Part A: Scheduled Maintenance Services” explains what to have done and how often. Some of these services can be complex, so unless you are technically qualified and have the necessary equipment, you should let your dealer’s service department or another qualified service center do these jobs.

⚠ CAUTION:

Performing maintenance work on a vehicle can be dangerous. In trying to do some jobs, you can be seriously injured. Do your own maintenance work only if you have the required know-how and the proper tools and equipment for the job. If you have any doubt, have a qualified technician do the work.

If you want to get the service information, see “Service and Owner Publications” in the Index.

“Part B: Owner Checks and Services” tells you what should be checked and when. It also explains what you can easily do to help keep your vehicle in good condition.

“Part C: Recommended Fluids and Lubricants” lists some recommended products necessary to help keep your vehicle properly maintained. These products, or their equivalents, should be used whether you do the work yourself or have it done.

“Part D: Maintenance Record” is a place for you to record and keep track of the maintenance performed on your vehicle. Keep your maintenance receipts. They may be needed to qualify your vehicle for warranty repairs.

Part A: Scheduled Maintenance Services

Using Your Maintenance Schedule

We at General Motors want to help you keep your vehicle in good working condition. But we don't know exactly how you'll drive it. You may drive very short distances only a few times a week. Or you may drive long distances all the time in very hot, dusty weather. You may use your vehicle in making deliveries or in many other ways.

Because of all the different ways people use their vehicles, maintenance needs vary. You may need more frequent checks and replacements. So please read the following and note how you drive. If you have any questions on how to keep your vehicle in good condition, see your dealer.

This part tells you the maintenance services you should have done and when you should schedule them. If you go to your dealer for your service needs, you'll know that GM-trained and supported service people will perform the work using genuine GM parts.

The proper fluids and lubricants to use are listed in Part C. Make sure whoever services your vehicle uses these. All parts should be replaced and all necessary repairs done before you or anyone else drives the vehicle.

This schedule is for vehicles that:

- carry passengers and cargo within recommended limits. You will find these limits on your vehicle's GVW Rating label. See "Loading Your Vehicle" in the Index.
- are driven on reasonable road surfaces within legal driving limits.
- use the recommended fuel. See "Fuel" in the Index.

Scheduled Maintenance Supplements

If your vehicle has a Caterpillar® diesel engine, your owner's manual is supplemented by the Caterpillar® Diesel Engine Operation & Maintenance Manual. If your vehicle has an Allison transmission, your owner's manual is supplemented by an Allison Transmission Operator's Manual. Always refer to these manuals for related maintenance services.

Scheduled Maintenance

The services shown in this schedule up to 100,000 miles (166 000 km) should be repeated after 100,000 miles (166 000 km) at the same intervals for the life of this vehicle. The services shown after 100,000 miles (166 000 km) should be repeated at the same miles (km) after those intervals for the life of this vehicle.

Gasoline engine vehicles have a computer that lets you know when to change your engine oil. This is not based on mileage, but on engine revolutions and engine operating temperature. When the computer has calculated that the oil needs changing, the GM Oil Life System™ will indicate that a change is necessary.

The "Footnotes" at the end of this Maintenance Schedule further explain maintenance services.

See "Scheduled Maintenance Supplements" earlier in this section.

100 Miles (160 km)

- ☐ Wheel stud nut service. *(46)*

1,000 Miles (1 600 km)

- ☐ Wheel stud nut service. *(46)*
- ☐ Rear axle air shift motor service. *(11)*
- ☐ L18/LB7 Engines Only: Clutch pedal free travel service. *(10)*

7,500 Miles (12 000 km)

- ☐ Gasoline Engine Only: Check Oil Life System. If engine oil and filter are changed, reset system. See "Engine Oil" in the Index. *(3)(9)*
- ☐ Check fluid levels (or every 3 months, whichever occurs first). *(1)(6)*
- ☐ Chassis lubrication service (or every 6 months, whichever occurs first). *(12)*
- ☐ Wheels and tires service. *(15)*
- ☐ Parking brake service (or every 6 months, whichever occurs first). *(8)*
- ☐ L18/LB7 Engines Only: Clutch pedal free travel service. *(10)*

10,000 Miles (16 000 km)

- ☐ DURAMAX™ Diesel Only: Change engine oil and filter (or every 12 months, whichever occurs first). *(2)(3)*

15,000 Miles (24 000 km)

- ☐ Gasoline Engine Only: Check Oil Life System. If engine oil and filter are changed, reset system. See “Engine Oil” in the Index. *(3)(9)*
- ☐ Chassis lubrication service (or every 6 months, whichever occurs first). *(12)*
- ☐ Check fluid levels (or every 3 months, whichever occurs first). *(1)(6)*
- ☐ DURAMAX™ Diesel Only: Replace fuel filter.
- ☐ Steering system service. *(13)*
- ☐ Front and rear suspension service. *(14)*
- ☐ Spring-to-axle U-bolts and shackle bolts service. *(16)*
- ☐ Exhaust system service (or every 6 months, whichever occurs first). *(3)(4)(17)*
- ☐ Wheels and tires service. *(15)*
- ☐ Hydraulic brake service (or every 6 months, whichever occurs first). *(7)(46)*
- ☐ Parking brake service (or every 6 months, whichever occurs first). *(8)*
- ☐ Thermostatically controlled engine cooling fan service. *(4)(20)*
- ☐ Shields and underhood insulation service. *(4)(5)(21)*
- ☐ L18/LB7 Engines Only: Clutch pedal free travel service. *(10)*

20,000 Miles (32 000 km)

- ☐ DURAMAX™ Diesel Only: Change engine oil and filter (or every 12 months, whichever occurs first). *(2)(3)*
- ☐ Air compressor dry element pleated paper air strainer service (or every 2 months or every 800 hours, whichever occurs first).

22,500 Miles (36 000 km)

- ☐ Gasoline Engine Only: Check Oil Life System. If engine oil and filter are changed, reset system. See “Engine Oil” in the Index. *(3)(9)*
- ☐ Check fluid levels (or every 3 months, whichever occurs first). *(1)(6)*
- ☐ Chassis lubrication service (or every 6 months, whichever occurs first). *(12)*
- ☐ Inspect door hinge pins and bushings and replace as necessary.
- ☐ Cooling system service. Clean the cooling system filler cap with clean water, clean the core, pressure test the cap and the system for proper pressure capability and inspect condition of cooling and heater hoses and clamps. Replace hoses if cracked, swollen or damaged.

- ☐ Wheel bearing (grease type) service (or every 24 months, whichever occurs first, and whenever hubs are removed). *(23)(46)*
- ☐ Wheels and tires service. *(15)*
- ☐ Parking brake service (or every 6 months, whichever occurs first). *(8)*
- ☐ Air intake system service (or every 24 months, whichever occurs first). *(4)(5)(24)*
- ☐ Evaporative Control System service (if equipped) (or every 24 months, whichever occurs first). *(3)(26)* †
- ☐ Rear axle air shift motor service. *(11)*
- ☐ Air brake service (or every 6 months, whichever occurs first). *(39)*
- ☐ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(40)*
- ☐ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ☐ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first); lubricate linkage.
- ☐ Air brake chamber service (or every 2 months, whichever occurs first). *(41)*
- ☐ Trailer brake hand control valve service (or every 3 months, or every 900 hours, whichever occurs first). *(42)*
- ☐ L18/LB7 Engines Only: Clutch pedal free travel service. *(10)*

30,000 Miles (48 000 km)

- ☐ Gasoline Engine Only: Check Oil Life System. If engine oil and filter are changed, reset system. See “Engine Oil” in the Index. *(3)(9)*
- ☐ DURAMAX™ Diesel Only: Change engine oil and filter (or every 12 months, whichever occurs first). *(2)(3)*
- ☐ Check fluid levels (or every 3 months, whichever occurs first). *(1)(6)*
- ☐ DURAMAX™ Diesel Only: Replace fuel filter.
- ☐ Chassis lubrication service (or every 6 months, whichever occurs first). *(12)*
- ☐ Replace fuel filter(s) (or every 12 months, whichever occurs first). *(3)*
- ☐ Steering system service. *(13)*
- ☐ Front and rear suspension service. *(14)*
- ☐ Spring-to-axle U-bolts and shackle bolts service. *(16)*
- ☐ Exhaust system service (or every 6 months, whichever occurs first). *(3)(4)(17)*

(Continued)

30,000 Miles (48 000 km) (Continued)

- ☐ Wheels and tires service. *(15)*
- ☐ Hydraulic brake service (or every 6 months, whichever occurs first). *(7)(46)*
- ☐ Parking brake service (or every 6 months, whichever occurs first). *(8)*
- ☐ C600, C700 and C800 Gasoline Engines Only: Engine drive belts service (or every 12 months, whichever occurs first). *(18)*
- ☐ Thermostatically controlled engine cooling fan service. *(4)(20)*
- ☐ Shields and underhood insulation service. *(4)(5)(21)*
- ☐ L18/LB7 Engines Only: Clutch pedal free travel service. *(10)*

37,500 Miles (60 000 km)

- ☐ Gasoline Engine Only: Check Oil Life System. If engine oil and filter are changed, reset system. See “Engine Oil” in the Index. *(3)(9)*
- ☐ Check fluid levels (or every 3 months, whichever occurs first). *(1)(6)*
- ☐ Chassis lubrication service (or every 6 months, whichever occurs first). *(12)*
- ☐ Wheels and tires service. *(15)*
- ☐ Parking brake service (or every 6 months, whichever occurs first). *(8)*
- ☐ L18/LB7 Engines Only: Clutch pedal free travel service. *(10)*

40,000 Miles (64 000 km)

- ☐ DURAMAX™ Diesel Only: Change engine oil and filter (or every 12 months, whichever occurs first). *(2)(3)*
- ☐ Air compressor dry element pleated paper air strainer service (or every 2 months or every 800 hours, whichever occurs first).

45,000 Miles (72 000 km)

- ☐ Gasoline Engine Only: Check Oil Life System. If engine oil and filter are changed, reset system. See “Engine Oil” in the Index. *(3)(9)*
- ☐ Check fluid levels (or every 3 months, whichever occurs first). *(1)(6)*
- ☐ DURAMAX™ Diesel Only: Replace fuel filter.
- ☐ Chassis lubrication service (or every 6 months, whichever occurs first). *(12)*
- ☐ Cooling system service. Clean the cooling system filler cap with clean water, clean the core, pressure test the cap and the system for proper pressure capability and inspect condition of cooling and heater hoses and clamps. Replace hoses if cracked, swollen or damaged.

- ☐ Wheel bearing (grease type) service (or every 24 months, whichever occurs first, and whenever hubs are removed). *(23)(46)*
- ☐ Inspect door hinge pins and bushings and replace as necessary.
- ☐ Steering system service. *(13)*
- ☐ Front and rear suspension service. *(14)*
- ☐ Spring-to-axle U-bolts and shackle bolts service. *(16)*
- ☐ Exhaust system service (or every 6 months, whichever occurs first). *(3)(4)(17)*
- ☐ Wheels and tires service. *(15)*
- ☐ Hydraulic brake service (or every 6 months, whichever occurs first). *(7)(46)*
- ☐ Parking brake service (or every 6 months, whichever occurs first). *(8)*
- ☐ Thermostatically controlled engine cooling fan service. *(4)(20)*
- ☐ Shields and underhood insulation service. *(4)(5)(21)*
- ☐ Rear axle air shift motor service. *(11)*
- ☐ Air intake system service (or every 24 months, whichever occurs first). *(4)(5)(24)*
- ☐ Evaporative Control System service (if equipped) (or every 24 months, whichever occurs first). *(3)(26)* †
- ☐ Air brake service (or every 6 months, whichever occurs first). *(39)*
- ☐ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(40)*
- ☐ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ☐ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first); lubricate linkage.
- ☐ Air brake chamber service (or every 2 months, whichever occurs first). *(41)*
- ☐ Trailer brake hand control valve service (or every 3 months, or every 900 hours, whichever occurs first). *(42)*
- ☐ L18/LB7 Engines Only: Clutch pedal free travel service. *(10)*

50,000 Miles (80 000 km)

- ☐ DURAMAX™ Diesel Only: Change engine oil and filter (or every 12 months, whichever occurs first). *(2)(3)*
- ☐ Inspect air compressor discharge port (or every 6 months or every 1,800 hours, whichever occurs first).

52,500 Miles (84 000 km)

- ☐ Gasoline Engine Only: Check Oil Life System. If engine oil and filter are changed, reset system. See “Engine Oil” in the Index. *(3)(9)*
- ☐ Check fluid levels (or every 3 months, whichever occurs first). *(1)(6)*
- ☐ Chassis lubrication service (or every 6 months, whichever occurs first). *(12)*
- ☐ Wheels and tires service. *(15)*
- ☐ Parking brake service (or every 6 months, whichever occurs first). *(8)*
- ☐ L18/LB7 Engines Only: Clutch pedal free travel service. *(10)*

60,000 Miles (96 000 km)

- ☐ Gasoline Engine Only: Check Oil Life System. If engine oil and filter are changed, reset system. See “Engine Oil” in the Index. *(3)(9)*
- ☐ DURAMAX™ Diesel Only: Change engine oil and filter (or every 12 months, whichever occurs first). *(2)(3)*
- ☐ Gasoline Engine Only (Vehicles with GVW greater than 16,000 lbs.): Spark plug service. *(3)(28)*
- ☐ Check fluid levels (or every 3 months, whichever occurs first). *(1)(6)*
- ☐ DURAMAX™ Diesel Only: Replace fuel filter.
- ☐ Chassis lubrication service (or every 6 months, whichever occurs first). *(12)*
- ☐ Replace fuel filter(s) (or every 12 months, whichever occurs first). *(3)*
- ☐ Inspect door hinge pins and bushings and replace as necessary.
- ☐ Steering system service. *(13)*
- ☐ Front and rear suspension service. *(14)*
- ☐ Spring-to-axle U-bolts and shackle bolts service. *(16)*
- ☐ Exhaust system service (or every 6 months, whichever occurs first). *(3)(4)(17)*
- ☐ Wheels and tires service. *(15)*
- ☐ Hydraulic brake service (or every 6 months, whichever occurs first). *(7)(46)*
- ☐ Parking brake service (or every 6 months, whichever occurs first). *(8)*
- ☐ C600, C700 and C800 Gasoline Engines Only: Engine drive belts service (or every 12 months, whichever occurs first). *(18)*
- ☐ Thermostatically controlled engine cooling fan service. *(4)(20)*
- ☐ Shields and underhood insulation service. *(4)(5)(21)*
- ☐ Air compressor dry element pleated paper air strainer service (or every 2 months or every 800 hours, whichever occurs first).
- ☐ L18/LB7 Engines Only: Clutch pedal free travel service. *(10)*

67,500 Miles (108 000 km)

- ☐ Gasoline Engine Only: Check Oil Life System. If engine oil and filter are changed, reset system. See “Engine Oil” in the Index. *(3)(9)*
- ☐ Check fluid levels (or every 3 months, whichever occurs first). *(1)(6)*
- ☐ Chassis lubrication service (or every 6 months, whichever occurs first). *(12)*
- ☐ Cooling system service. Clean the cooling system filler cap with clean water, clean the core, pressure test the cap and the system for proper pressure capability and inspect condition of cooling and heater hoses and clamps. Replace hoses if cracked, swollen or damaged.
- ☐ Wheel bearing (grease type) service (or every 24 months, whichever occurs first, and whenever hubs are removed). *(23)(46)*
- ☐ Wheels and tires service. *(15)*
- ☐ Parking brake service (or every 6 months, whichever occurs first). *(8)*
- ☐ Rear axle air shift motor service. *(11)*
- ☐ Air intake system service (or every 24 months, whichever occurs first). *(4)(5)(24)*
- ☐ Evaporative Control System service (if equipped) (or every 24 months, whichever occurs first). *(3)(26)* †
- ☐ Air brake service (or every 6 months, whichever occurs first). *(39)*
- ☐ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(40)*
- ☐ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ☐ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first); lubricate linkage.
- ☐ Air brake chamber service (or every 2 months, whichever occurs first). *(41)*
- ☐ Trailer brake hand control valve service (or every 3 months, or every 900 hours, whichever occurs first). *(42)*
- ☐ L18/LB7 Engines Only: Clutch pedal free travel service. *(10)*

70,000 Miles (112 000 km)

- ☐ DURAMAX™ Diesel Only: Change engine oil and filter (or every 12 months, whichever occurs first). *(2)(3)*

75,000 Miles (120 000 km)

- ☐ Gasoline Engine Only: Check Oil Life System. If engine oil and filter are changed, reset system. See "Engine Oil" in the Index. *(3)(9)*
- ☐ Chassis lubrication service (or every 6 months, whichever occurs first). *(12)*
- ☐ Check fluid levels (or every 3 months, whichever occurs first). *(1)(6)*
- ☐ DURAMAX™ Diesel Only: Replace fuel filter.
- ☐ Steering system service. *(13)*
- ☐ Front and rear suspension service. *(14)*
- ☐ Spring-to-axle U-bolts and shackle bolts service. *(16)*
- ☐ Exhaust system service (or every 6 months, whichever occurs first). *(3)(4)(17)*
- ☐ Wheels and tires service. *(15)*
- ☐ Fuel tank, fuel cap and fuel lines service (or every 72 months, whichever occurs first). *(3)(30)* †
- ☐ EGR system inspection (or every 72 months, whichever occurs first). *(3)(31)*
- ☐ Hydraulic brake service (or every 6 months, whichever occurs first). *(7)(46)*
- ☐ Parking brake service (or every 6 months, whichever occurs first). *(8)*
- ☐ Thermostatically controlled engine cooling fan service. *(4)(20)*
- ☐ Shields and underhood insulation service. *(4)(5)(21)*
- ☐ L18/LB7 Engines Only: Clutch pedal free travel service. *(10)*

80,000 Miles (128 000 km)

- ☐ DURAMAX™ Diesel Only: Change engine oil and filter (or every 12 months, whichever occurs first). *(2)(3)*
- ☐ Air compressor dry element pleated paper air strainer service (or every 2 months or every 800 hours, whichever occurs first).

82,500 Miles (132 000 km)

- ☐ Gasoline Engine Only: Check Oil Life System. If engine oil and filter are changed, reset system. See "Engine Oil" in the Index. *(3)(9)*
- ☐ Check fluid levels (or every 3 months, whichever occurs first). *(1)(6)*
- ☐ Chassis lubrication service (or every 6 months, whichever occurs first). *(12)*
- ☐ Wheels and tires service. *(15)*
- ☐ Wheel bearings service -- Eaton Axle (oil-filled) (or every 24 months, whichever occurs first). *(23)(46)*
- ☐ Parking brake service (or every 6 months, whichever occurs first). *(8)*
- ☐ L18/LB7 Engines Only: Clutch pedal free travel service. *(10)*

90,000 Miles (144 000 km)

- ☐ Gasoline Engine Only: Check Oil Life System. If engine oil and filter are changed, reset system. See “Engine Oil” in the Index. *(3)(9)*
- ☐ DURAMAX™ Diesel Only: Change engine oil and filter (or every 12 months, whichever occurs first). *(2)(3)*
- ☐ Check fluid levels (or every 3 months, whichever occurs first). *(1)(6)*
- ☐ DURAMAX™ Diesel Only: Replace fuel filter.
- ☐ Chassis lubrication service (or every 6 months, whichever occurs first). *(12)*
- ☐ Cooling system service. Clean the cooling system filler cap with clean water, clean the core, pressure test the cap and the system for proper pressure capability and inspect condition of cooling and heater hoses and clamps. Replace hoses if cracked, swollen or damaged.
- ☐ Wheel bearing (grease type) service (or every 24 months, whichever occurs first, and whenever hubs are removed). *(23)(46)*
- ☐ Replace fuel filter(s) (or every 12 months, whichever occurs first). *(3)*
- ☐ Steering system service. *(13)*
- ☐ Front and rear suspension service. *(14)*
- ☐ Spring-to-axle U-bolts and shackle bolts service. *(16)*
- ☐ Exhaust system service (or every 6 months, whichever occurs first). *(3)(4)(17)*
- ☐ Inspect door hinge pins and bushings and replace as necessary.
- ☐ Wheels and tires service. *(15)*
- ☐ Hydraulic brake service (or every 6 months, whichever occurs first). *(7)(46)*
- ☐ Parking brake service (or every 6 months, whichever occurs first). *(8)*
- ☐ C600, C700 and C800 Gasoline Engines Only: Engine drive belts service (or every 12 months, whichever occurs first). *(18)*
- ☐ Thermostatically controlled engine cooling fan service. *(4)(20)*
- ☐ Shields and underhood insulation service. *(4)(5)(21)*
- ☐ Rear axle air shift motor service. *(11)*
- ☐ Air intake system service (or every 24 months, whichever occurs first). *(4)(5)(24)*

(Continued)

90,000 Miles (144 000 km) (Continued)

- ☐ Evaporative Control System service (if equipped) (or every 24 months, whichever occurs first). *(3)(26)* †
- ☐ Air brake service (or every 6 months, whichever occurs first). *(39)*
- ☐ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(40)*
- ☐ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ☐ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first); lubricate linkage.
- ☐ Air brake chamber service (or every 2 months, whichever occurs first). *(41)*
- ☐ Trailer brake hand control valve service (or every 3 months, or every 900 hours, whichever occurs first). *(42)*
- ☐ L18/LB7 Engines Only: Clutch pedal free travel service. *(10)*

97,500 Miles (156 000 km)

- ☐ Gasoline Engine Only: Check Oil Life System. If engine oil and filter are changed, reset system. See “Engine Oil” in the Index. *(3)(9)*
- ☐ Check fluid levels (or every 3 months, whichever occurs first). *(1)(6)*
- ☐ Chassis lubrication service (or every 6 months, whichever occurs first). *(12)*
- ☐ Wheels and tires service. *(15)*
- ☐ Parking brake service (or every 6 months, whichever occurs first). *(8)*
- ☐ L18/LB7 Engines Only: Clutch pedal free travel service. *(10)*

100,000 Miles (160 000 km)

- ☐ DURAMAX™ Diesel Only: Change engine oil and filter (or every 12 months, whichever occurs first). *(2)(3)*
- ☐ Diesel Only: Inspect engine drive belt; replace as necessary.
- ☐ Gasoline Engine Only (Vehicles with GVW of 16,000 lbs. or less): Spark plug service. *(3)(28)*
- ☐ Change power steering fluid (or every 36 months, whichever occurs first). *(13)*
- ☐ Replace power steering reservoir filter element (or every 24 months, whichever occurs first).
- ☐ Front axle service. *(38)*
- ☐ Rear axle service -- Eaton, Rockwell, Spicer Axles (or every 12 months, whichever occurs first). *(37)*

- ☐ Exhaust brake service (if equipped). Check for excessive spindle free play and smooth operation. Lubricate ball joint cap.
- ☐ Air compressor dry element pleated paper air strainer service (or every 2 months or every 800 hours, whichever occurs first).
- ☐ Inspect air compressor discharge port (or every 6 months or every 1,800 hours, whichever occurs first).
- ☐ Manual transmission (ZF 6-speed only) fluid replacement (or every 48 months, whichever occurs first).

120,000 Miles (192 000 km)

- ☐ C600, C700 and C800 Gasoline Engines Only: Replace engine drive belts.

150,000 Miles (240 000 km)

- ☐ Cooling system service (or every 60 months since last service, whichever occurs first). *(3)(35)*
- ☐ Diesel Engine Only: Inspect engine drive belt; replace as necessary.

200,000 Miles (320 000 km)

- ☐ Remove, disassemble, clean and inspect the air brake trailer supply valve (or every 2 years, or every 7,200 hours, whichever occurs first).
- ☐ Diesel Engine Only: Inspect engine drive belt; replace as necessary.
- ☐ C400 and C500 Gasoline Engines Only: Inspect drive belts; replace as necessary. *(18)*

250,000 Miles (400 000 km)

- ☐ Wheel bearings service -- Eaton Axle (oil-filled) (or every 36 months, whichever occurs first). *(23)(46)*
- ☐ Rear axle service -- Eaton, Rockwell, Spicer Axles (or every 36 months, whichever occurs first). *(37)*
- ☐ Manual transmission (except ZF 6-speed) fluid replacement (or every 60 months, whichever occurs first).

300,000 Miles (480 000 km)

- ☐ Remove, disassemble, clean and inspect the air brake air dryer (or every 3 years, or 10,800 hours, whichever occurs first). Replace dessicant on Bendix-Westinghouse units.

Footnotes

† = The U.S. Environmental Protection Agency or the California Air Resources Board has determined that the failure to perform this maintenance item will not nullify the emission warranty or limit recall liability prior to the completion of the vehicle's useful life. We, however, urge that all recommended maintenance services be performed at the indicated intervals and the maintenance be recorded.

(1) = If your vehicle has an Allison automatic transmission, your GM owner's manual is supplemented by an Allison Transmission Operator's Manual. Always refer to these manuals for related maintenance services.

(2) = Refer to the Caterpillar Diesel Engine Operation and Maintenance Manual for oil recommendations and change intervals.

(3) = An Emission Control Service.

(4) = A Noise Emission Control Device.

(5) = Applies only to vehicles sold in the United States.

(6) = Check fluid level in brake master cylinder, power steering pump, axle, transmission and hydraulic spring parking brake pump (if equipped). A low fluid level in the brake master cylinder can indicate worn brake linings and should be checked accordingly.

(7) = Inspect brake lines and hoses for proper hook-up, binding, leaks, cracks, chafing, etc. Inspect disc brake pads for wear and rotors for surface condition. Inspect caliper assemblies. Check brake pedal for excessive free play or travel (or every 6 months, whichever occurs first) and have serviced if needed. Check brakes more often if driving habits and conditions result in frequent braking.

(8) = Inspect parking brake drum and linings for wear or cracks and check linkage and adjustment.

(9) = This vehicle has the GM Oil Life System. This system will show you when to change the engine oil and filter -- usually between 3,000 miles (5 000 km) and 7,500 miles (12 000 km) since your last oil change. Under severe conditions, the indicator may come on before 3,000 miles (5 000 km). Never drive your vehicle more than 7,500 miles (12 000 km) or 12 months without an oil and filter change.

Remember to reset the Oil Life System whenever the oil is changed. For more information, see "Change Oil Light" in the Index.

(10) = Check clutch pedal for free travel. Press pedal by hand until resistance is felt. Free travel should be maintained at 1.5 to 2 inches (38 to 51 mm) measured at the clutch pedal pad. Make checks at 1,000 miles (1 600 km) and then at every 7,500 mile (12 000 km) interval thereafter.

(11) = Inspect rear axle air shift motor for fluid leaks. Remove plug to check fluid level. Inspect air lines and hoses for proper hook-up, binding, leaks, etc. Inspect at 3,000 miles (5 000 km) and 22,500 miles (36 000 km) and then every 22,500 miles (36 000 km) thereafter.

(12) = Chassis Lubrication Service: Lubricate all grease fittings in front suspension, front axle and steering linkage. DO NOT lubricate kingpin bushings with air pressure equipment; instead, use a hand grease gun to ensure complete purge and eliminate sealer cap distortion. Lubricate transmission and shift linkage, hood latches and hood hinges, parking brake lever pivot, clevis pins and linkage, disc brake caliper rails, clutch linkage and release bearing (if equipped), bearing pads, propshaft universal joints, brake camshaft bracket, slack adjusters, pedal shaft, clutch cross shaft and clutch pedal springs. Lubricate suspension, axle and steering linkage more often when operating under dusty or muddy conditions and in excessive off-road use.

(13) = Check steering system:

- ☐ Look for damaged, loose or missing parts. Also look for parts showing signs of wear or lack of lubrication. Replace parts as needed. Also check steering gear mounting bolts, pitman arm nut, gear housing upper cover and side cover attaching bolts, steering column mounting bolts and cardan joint clamp bolts; tighten if necessary. (See service manual.)
- ☐ Inspect power steering hoses, tubes and fittings for leaks. Hoses and lines must not be twisted, kinked or tightly bent. Make sure clips, clamps, supporting tubes and hoses are in place and properly secured.
- ☐ Check steering gear for leakage around pitman shaft and housing. If leakage is evident (lubricant oozing out, not just oily film), leak should be corrected immediately.

(14) = Check front and rear suspension. Look for damaged, loose or missing parts or parts showing signs of wear or lack of lubrication. Replace parts as needed.

(15) = Adjust tire pressures as indicated on the GVW Rating label for optimum tire life. See “Tires” in the Index for further details. Check tires for excessive or abnormal wear or damage. Also check for damaged wheels. Replace wheels and/or tires as needed.

(16) = Check spring-to-axle U-bolts and shackle bolts for proper torque. See the service manual for torque sequence and specifications. When parts are replaced, the torque must be checked and adjusted more often during the first 6,000 miles (10 000 km). Check torque at 500 miles (800 km) and 2,000 miles (3 000 km) after first use of parts.

(17) = Check complete exhaust system and cab areas near the exhaust system for broken, damaged, missing or out-of-position parts. Also inspect for open seams, holes, loose connections or other conditions which could let exhaust fumes seep into the driver compartment. Needed repairs should be made at once. To help maintain system integrity, replace exhaust pipes whenever a new muffler is put on.

(18) = Check all gasoline engine drive belts for cracks, fraying and wear. Replace as needed.

(20) = With the engine off and below normal operating temperature, check to see that the thermostatically controlled engine cooling fan can be rotated by hand on viscous-operated drives. Replace as needed.

(21) = Check shields and underhood insulation for damage or looseness. Adjust or replace as needed.

(23) = Wheel bearing service:

- ☐ Grease type -- Clean, inspect and lubricate with the proper wheel bearing grease at designated intervals or when hubs are removed. See “Recommended Fluids and Lubricants” in the Index.
- ☐ Oil-filled type -- Some wheel bearings are lubricated by rear axle lubricant. When you have oil-filled hubs, use lubricant identical to that used in your rear axle. Lubricant change intervals are the same for front and rear axles. However, you must maintain oil level at the OIL LEVEL mark between change intervals. See “Recommended Fluids and Lubricants” in the Index.

(24) = Check the air intake system installation to see that gaskets are seated properly and all hose connections, fasteners and other components are tight. Tighten connections and fasteners or replace parts as required.

(26) = Evaporative Control System Service (if equipped): Check all fuel and vapor lines and hoses for proper connections and correct routing (or every 24 months, whichever occurs first). Replace parts as needed.

(28) = Replace spark plugs. Inspect wires for damage. Check the wire boot and boot heat shield fit at spark plugs and coil. Replace parts as needed.

(30) = Check the fuel tank, fuel cap and fuel lines for damage which could cause leakage. Inspect fuel cap for correct sealing ability and any indications of damage. Check fuel cap gasket for even filler neck imprint. Replace parts as needed.

(31) = Check EGR system as described in the service manual. See “Service and Owner Publications” in the Index.

(32) = Inspect Electronic Vacuum Regulator Valve (EVRV) filter for excessive contamination or plugging. If needed, clean filter with solution of soap and water, let dry and install.

(35) = Drain, flush and refill cooling system. See “Recommended Fluids and Lubricants” in the Index for what to use. Inspect hoses. Clean radiator, condenser, pressure cap and neck. Pressure test cooling system and pressure cap. For Caterpillar® diesel engines, always refer to the Caterpillar Diesel Engine Operation & Maintenance Manual for coolant recommendations and change intervals.

(37) = Rear axle service: Change the lubricant. See “Recommended Fluids and Lubricants” in the Index.

(38) = Front axle service: Re-pack upper kingpin roller bearing.

(39) = Air brake service:

- ☐ Inspect brake lines and hoses for proper hook-up, binding, leaks, cracks, chafing, etc. Inspect drum brake linings for wear or cracks. Inspect other brake parts at each wheel, including drums, wheel cylinders and piston heat shields, boots and wheel speed sensor wiring. Check brake pedal for excessive free play or travel (or every 6 months, whichever occurs first) and have serviced if needed. Check brakes more often if driving habits and conditions result in frequent braking. Replace air dryer cartridge only if excessive oil or moisture is present. A small amount of oil in the system is normal and should not be considered as a reason to replace the cartridge.
- ☐ Test air lines for leaks; tighten as needed. Replace compressor filter.
- ☐ Inspect air parking brake chamber for leaks and damage. Inspect lines and hoses for leaks, cracks, chafing, etc. Also check all attachments for tightness, wear or damage. Note: The spring brake section of the rear brake diaphragms are non-serviceable.
- ☐ Replace the air compressor filter element, mounted on the air compressor. For remote air compressor intake service, refer to engine air cleaner filter replacement.
- ☐ Remove, disassemble, clean and inspect the safety valve, standard brake chamber, quick release valve, quick release/double check valve combination, parking brake control valve, double check valve, pressure protection valve and alcohol injector.
- ☐ Remove, disassemble and clean the application valve; replace parts showing wear.
- ☐ Remove, disassemble, clean and inspect the spring brake control valve; replace rubber parts.

(40) = Clean and lubricate air brake automatic slack adjuster. Check pushrod travel and auto adjustment operation. Have serviced if needed.

(41) = Air brake chamber service: Check operation, mounting, clamps and air lines and check for leaks.

(42) = Trailer brake hand control valve service: Check operation; lubricate cam and follower.

(46) = Tighten the wheel stud nuts to the specified torque values at 100 miles (160 km). Thereafter, tighten them 1,000 miles (1 600 km) after each time the wheel is removed. See “Tightening the Wheel Nuts” in the Index.

Part B: Owner Checks and Services

Listed in this part are owner checks and services which should be performed at the intervals specified to help ensure the safety, dependability and emission control performance of your vehicle.

For your safety and that of others, any of the safety-related components that may have been damaged in an accident should be checked and any needed repairs made before operating the vehicle.

At the minimum, these routine checks should be made every 6 months or 6,000 miles (10 000 km), whichever occurs first. Whenever repairs are needed, have them completed before operating the vehicle.

At Each Fuel Fill

It is important for you or a service station attendant to perform these underhood checks at each fuel fill.

Engine Oil Level Check

Check the engine oil level and add the proper oil if necessary. See “Engine Oil” in the Index for further details.

Engine Coolant Level Check

Check the engine coolant level and add DEX-COOL® coolant mixture if necessary. See “Engine Coolant” in the Index for further details.

Windshield Washer Fluid Level Check

Check the windshield washer fluid level in the windshield washer tank and add the proper fluid if necessary. See “Windshield Washer Fluid” in the Index for further details.

Tire Inflation Check

Check tire inflation cold. Make sure tires are inflated to the pressures specified on the GVW Rating label. See “Loading Your Vehicle” and “Tires” in the Index for further details.

At Least Twice a Year

Restraint System Check

Make sure the safety belt reminder light (if equipped) and all your belts, buckles, latch plates, retractors and anchorages are working properly. Look for any other loose or damaged safety belt system parts. If you see anything that might keep a safety belt system from doing its job, have it repaired. Have any torn or frayed safety belts replaced.

Wiper Blade Check

Inspect wiper blades for wear or cracking. Replace blade inserts that appear worn or damaged or that streak or miss areas of the windshield. Also see “Wiper Blades, Cleaning” in the Index.

Engine Air Cleaner Filter Restriction Indicator Check

Your vehicle has an indicator located on the air cleaner in the engine compartment that lets you know when the air cleaner filter is dirty and needs to be changed. Check indicator at least twice a year or when your engine oil is changed, whichever occurs first. See “Engine Air Cleaner” in the Index for more information. Inspect your air cleaner filter restriction indicator more often if the vehicle is used in dusty areas.

Weatherstrip Lubrication

Silicone grease on weatherstrips will make them last longer, seal better, and not stick or squeak. Apply silicone grease with a clean cloth. During very cold, damp weather more frequent application may be required. See “Recommended Fluids and Lubricants” in the Index.

Body Lubrication Service

Lubricate all exposed surfaces such as door checks, door lock bolts, lock strike plates, door latches and dovetail bumper wedges. Where oil holes are provided a dripless oil can be used. The seat adjusters, seat track, door weatherstrips and rubber cap bumpers should also be lubricated.

Part C tells you what to use. More frequent lubrication may be required when exposed to a corrosive environment.

Parking Brake Check

Park on a fairly steep hill and hold the vehicle with the parking brake only. This checks holding ability.

Starter Switch Check

⚠ CAUTION:

When you are doing this check, the vehicle could move suddenly. If it does, you or others could be injured. Follow the steps below.

1. Before you start, be sure you have enough room around the vehicle.
2. Firmly apply both the parking brake and the regular brakes. See “Parking Brake” in the Index if necessary.

   Do not use the accelerator pedal, and be ready to turn off the engine immediately if it starts.
3. On automatic transmission vehicles, try to start the engine in each gear. The starter should work only in PARK (P), if equipped, or NEUTRAL (N). If the starter works in any other position, your vehicle needs service.

Automatic Transmission Shift Indicator Check

Check that the indicator points to the gear chosen.

Steering Check

Be alert for any changes in steering action, abnormal front tire wear or steering wheel position. An inspection or service is needed when the steering wheel is harder to turn or has too much free play, or if there are strange sounds when turning or parking.

Brake System Check

Be alert to illumination of the low air warning lamp or for the tone alarm, or changes in braking action, such as repeated pulling to one side, unusual sounds when braking or increased brake pedal travel. Make sure air brake system reservoirs are drained daily with full system air pressure, and check system for leaks. Any of these conditions could indicate the need for brake system inspection and/or service.

Engine Cooling System Service

Inspect the hoses and have them replaced if they are cracked, swollen or deteriorated. Inspect all pipes, fittings and clamps; replace as needed. Clean the outside of the radiator and air conditioning condenser. To help ensure proper operation, a pressure test of the cooling system and pressure cap is recommended at least once a year.

Exhaust System Check

Be alert for any changes in the sound of the exhaust system or any smell of fumes. These are signs the system may be leaking. Have it checked and/or repaired at once. Refer to “Engine Exhaust” and “Running Your Engine While You’re Parked” in the Index.

Windshield Wipers and Washers Check

Check operation and condition of the wiper blades. Check the flow of the washer spray.

Defroster Check

Move the control to the defrost symbol and the fan to HI or the high symbol. Then check the airflow from the ducts at the inside base of the windshield.

Mirrors and Sun Visors Check

Check that friction joints hold mirrors and sun visors in place.

Seat Adjuster Check

When adjusting a manual seat, be sure seat adjusters latch by attempting to move the seat after latching.

Lamps Check

Check panel lighting, warning lights, indicator lights and interior lamps. On the outside, check: license plate lamps, sidemarker lamps, reflectors or lights on outside mirrors, headlamps, parking lamps, identification and clearance lamps, taillamps, brake lamps, turn signals, backup lamps and hazard warning flashers. Have headlamp aim checked at once if beams seem improperly aimed.

Glass, Mirrors, Lamps and/or Reflectors Condition Check

Look for broken, scratched, dirty or damaged glass, mirrors, lamps or reflectors that could reduce the view or visibility or cause injury. Replace, clean or repair promptly.

Door Latches Check

Check that doors close, latch and lock tightly. Check for broken, damaged or missing parts that might prevent tight latching.

Hood Latches Check

Check that the hood closes firmly. Check for broken, damaged, loose or missing parts that might prevent tight latching. Make sure the secondary latch (if equipped) keeps the hood from opening all the way when the primary latch is released.

Fluid Leaks Check

Check for fuel, coolant, oil or other fluid leaks by looking at the surface beneath the vehicle after it has been parked for awhile.

Underbody Inspection

Corrosive materials used for ice, snow removal and dust control can collect on the underbody. If these materials are not removed, accelerated corrosion (rust) can occur on underbody parts such as fuel lines, frame, floor pan and exhaust system. At least every spring, flush these materials from the underbody with plain water. Take care to clean well any areas where mud and other debris can collect. Sediment packed in closed areas of the frame should be loosened before being flushed.

Engine Cover Check

Check that the cab's engine cover and seal (if equipped) are not torn or damaged. Be sure that the cover is clamped down firmly to the floor.

At Least Once a Year

Key Lock Cylinders Service

Lubricate the key lock cylinders with the lubricant specified in Part C.

Underbody Flushing Service

At least every spring, use plain water to flush any corrosive materials from the underbody. Take care to clean thoroughly any areas where mud and other debris can collect.

Tractor Protection (Breakaway) Valve Check

On air brake models, remove, disassemble, clean and inspect the tractor protection (breakaway) valve.

Part C: Recommended Fluids and Lubricants

Fluids and lubricants identified below by name, part number or specification may be obtained from your dealer.

USAGE	FLUID/LUBRICANT
Engine Oil (Gasoline Engine)	Engine oil with the American Petroleum Institute Certified for Gasoline Engines starburst symbol of the proper viscosity. To determine the preferred viscosity for your vehicle's engine, see "Engine Oil" in the Index.
Engine Oil (Caterpillar Diesel Engine)	See the Caterpillar® Operation & Maintenance Manual for engine oil recommendations.
Engine Coolant (Gasoline Engine & DURAMAX™ Diesel)	50/50 mixture of clean, drinkable water and use only DEX-COOL® Coolant. See "Engine Coolant" in the Index.
Engine Coolant (Caterpillar Diesel Engine)	See the Caterpillar® Operation & Maintenance Manual for engine coolant recommendations.
Hydraulic Brake System	Delco Supreme 11® Brake Fluid or equivalent DOT-3 brake fluid.
Windshield Washer Solvent	GM Optikleen® Washer Solvent or equivalent.
Clutch Bearing Lubricant	Clutch Bearing Lubricant (GM Part No. 12378484 or equivalent NLGI #3 consistency).

USAGE	FLUID/LUBRICANT
Exhaust Brake Ball Joint Cap Lubricant	High-Temperature Grease (GM Part No. U.S. 1051344, in Canada 903037, or equivalent) or NLGI #3 consistency.
Power Steering System	DEXRON®-III Automatic Transmission Fluid.
Manual Transmission (Except ZF 6-Speed)	Synthetic Manual Transmission Fluid (GM Part No. U.S. 12345724, in Canada 10953510).
Manual Transmission (ZF 6-Speed)	TranSynd™ Synthetic Transmission Fluid (GM Part No. U.S. 12378515, in Canada 88900701).

USAGE	FLUID/LUBRICANT
Automatic Transmission	See the Allison Transmission Operator's Manual for correct transmission fluid.
Chassis Lubrication	Chassis Lubricant (GM Part No. U.S. 12377985, in Canada 88901242, or equivalent) or lubricant meeting requirements of NLGI # 2, Category LB or GC-LB.
Front Wheel Bearing Grease (Except Oil Filled Hubs)	Wheel bearing lubricant meeting requirements of NLGI # 2, Category GC or GC-LB (GM Part No. U.S. 1051344, in Canada 993037, or equivalent).

USAGE	FLUID/LUBRICANT
Front Wheel Bearings with Oil Filled Hubs	SAE 75W-90 Synthetic Axle Lubricant for Medium Duty Trucks (GM Part No. U.S. 12345841, in Canada 10953512, or equivalent).
Rear Axle and Rear Hubs	SAE 75W-90 Synthetic Axle Lubricant for Medium Duty Trucks (GM Part No. U.S. 12345841, in Canada 10953512, or equivalent).
Rear Axle Shift Motor Lubricant	Refrigerant Oil (GM Part No. U.S. 5416939, in Canada 10953496).

USAGE	FLUID/LUBRICANT
Propshafts and Splines	Wheel bearing lubricant meeting requirements of NLGI # 2, Category GC or GC-LB (GM Part No. U.S. 1051344, in Canada 993037, or equivalent).
Cab -- Door Latches	Multi-Purpose Lubricant, Superlube® (GM Part No. U.S. 12346241, in Canada 10953474, or equivalent).
Weatherstrip Conditioning	Dielectric Silicone Grease (GM Part No. U.S. 12345579, in Canada 1974984, or equivalent).
Weatherstrip Squeaks	Synthetic Grease with Teflon, Superlube® (GM Part No. U.S. 12371287, in Canada 10953437, or equivalent).

Part D: Maintenance Record

After the scheduled services are performed, enter the date, odometer reading and services performed on the maintenance record charts provided here. Any additional information from “Owner Checks and Services” can be added on the following record pages. Also, you should retain all maintenance receipts. Your owner information portfolio is a convenient place to store them.

Maintenance Record			
DATE	**ODOMETER READING**	**SERVICED BY**	**MAINTENANCE PERFORMED**

Maintenance Record			
DATE	ODOMETER READING	SERVICED BY	MAINTENANCE PERFORMED

Maintenance Record

DATE	ODOMETER READING	SERVICED BY	MAINTENANCE PERFORMED

Maintenance Record			
DATE	ODOMETER READING	SERVICED BY	MAINTENANCE PERFORMED

Maintenance Record

DATE	ODOMETER READING	SERVICED BY	MAINTENANCE PERFORMED

Section 8 Customer Assistance Information

Here you will find out how to contact Chevrolet if you need assistance. This section also tells you how to obtain service publications and how to report any safety defects.

8-2 Customer Satisfaction Procedure
8-2 Customer Assistance for Text Telephone (TTY) Users
8-3 Customer Assistance Offices
8-4 Roadside Assistance Program
8-4 Reporting Safety Defects to the United States Government
8-5 Reporting Safety Defects to the Canadian Government
8-5 Reporting Safety Defects to General Motors

Customer Satisfaction Procedure

Your satisfaction and goodwill are important to your dealer and to Chevrolet. Normally, any concerns with the sales transaction or the operation of your vehicle will be resolved by your dealer's sales or service departments. Sometimes, however, despite the best intentions of all concerned, misunderstandings can occur. If your concern has not been resolved to your satisfaction, the following steps should be taken:

STEP ONE -- Discuss your concern with a member of dealership management. Normally, concerns can be quickly resolved at that level. If the matter has already been reviewed with the sales, service or parts manager, contact the owner of the dealership or the general manager.

STEP TWO -- If after contacting a member of dealership management, it appears your concern cannot be resolved by the dealership without further help, contact the Chevrolet or GMC Consumer Relations Manager by calling 1-800-TO-CHEVY (1-800-862-4389). In Canada, contact GM of Canada Customer Communication Centre in Oshawa by calling 1-800-263-3777 (English) or 1-800-263-7854 (French).

We encourage you to call the toll-free number in order to give your inquiry prompt attention. Please have the following information available to give the Customer Assistance Representative:

- Vehicle Identification Number (This is available from the vehicle registration or title, or the plate at the top left of the instrument panel and visible through the windshield.)
- Dealership name and location
- Vehicle delivery date and present mileage

When contacting Chevrolet, please remember that your concern will likely be resolved at a dealer's facility. That is why we suggest you follow Step One first if you have a concern.

Customer Assistance for Text Telephone (TTY) Users

To assist customers who are deaf, hard of hearing, or speech-impaired and who use Text Telephones (TTYs), Chevrolet has TTY equipment available at its Customer Assistance Center. Any TTY user can communicate with Chevrolet by dialing: 1-800-833-CHEV (1-800-833-2438). (TTY users in Canada can dial 1-800-263-3830.)

Customer Assistance Offices

Chevrolet encourages customers to call the toll-free number for assistance. If a U.S. customer wishes to write to Chevrolet, the letter should be addressed to Chevrolet Medium Duty Truck's Customer Assistance Center.

United States

GM Medium Duty Truck
Customer Assistance Center
P.O. Box 44947
Detroit, MI 48244

1-800-TO-CHEVY (1-800-862-4389)
1-800-833-2438 (For Text Telephone devices (TTYs))
Roadside Assistance: 1-800-TO-CHEVY

From:

Puerto Rico:	1-800-496-9992 (English) 1-800-496-9993 (Spanish)
U.S. Virgin Islands:	1-800-496-9994
Fax Number:	313-381-0022

Canada

General Motors of Canada Limited
Customer Communication Centre, 163-005
1908 Colonel Sam Drive
Oshawa, Ontario L1H 8P7

1-800-263-3777 (English)
1-800-263-7854 (French)
1-800-263-3830 (For Text Telephone devices (TTYs))
Roadside Assistance: 1-800-268-6800

All Overseas Locations

Please contact the local General Motors Business Unit.

Mexico, Central America and Caribbean Islands/Countries (Except Puerto Rico and U.S. Virgin Islands)

General Motors de Mexico, S. de R.L. de C.V.
Customer Assistance Center
Paseo de la Reforma # 2740
Col. Lomas de Bezares
C.P. 11910, Mexico, D.F.

01-800-508-0000
Long Distance: 011-52 - 53 29 0 800

Roadside Assistance Program

GM Medium Duty Truck's Roadside Assistance provides stranded owners with towing service for disabled vehicles.

This service combines the efforts of trained telephone representatives with a network of GM Medium Duty Truck's dealer services.

Just dial Medium Duty Truck Roadside Assistance at 1-800-TO-CHEVY (1-800-862-4389) to reach a qualified representative who can assist you in a repair or arrange a tow. Other recommended services can also be arranged for situations such as retrieving locked-in keys, changing a tire or delivering gasoline, at a charge to the owner. We also provide dealer information at no charge such as location of the nearest authorized medium duty GM Truck dealer and their hours of operation.

Roadside Assistance is available 24 hours a day, 7 days a week, 365 days a year, including weekends and holidays. Should you have any questions about Roadside Assistance, call the GM Medium Duty Truck Roadside Assistance Center or contact your dealer.

Reporting Safety Defects to the United States Government

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA), in addition to notifying General Motors.

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer or General Motors.

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at 1-800-424-9393 (or 366-0123 in the Washington, D.C. area) or write to:

NHTSA, U.S. Department of Transportation
Washington, D.C. 20590

You can also obtain other information about motor vehicle safety from the hotline.

Reporting Safety Defects to the Canadian Government

If you live in Canada, and you believe that your vehicle has a safety defect, you should immediately notify Transport Canada, in addition to notifying General Motors of Canada Limited. You may write to:

Transport Canada
330 Sparks Street
Tower C
Ottawa, Ontario K1A 0N5

Reporting Safety Defects to General Motors

In addition to notifying NHTSA (or Transport Canada) in a situation like this, we certainly hope you'll notify us. Please call us at 1-800-TO-CHEVY (1-800-862-4389), or write:

GM Medium Duty Truck
Customer Assistance Center
P.O. Box 44947
Detroit, MI 48244

In Canada, please call us at 1-800-263-3777 (English) or 1-800-263-7854 (French). Or, write:

General Motors of Canada Limited
Customer Communication Centre, 163-005
1908 Colonel Sam Drive
Oshawa, Ontario L1H 8P7

SERVICE PUBLICATIONS ORDERING INFORMATION

Service Manuals

Service Manuals have the diagnosis and repair information on engines, transmission, axle, suspension, brakes, electrical, steering, body, etc.

RETAIL SELL PRICE: $120.00

Service Bulletins

Service Bulletins give technical service information needed to knowledgeably service General Motors cars and trucks. Each bulletin contains instructions to assist in the diagnosis and service of your vehicle.

In Canada, information pertaining to Product Service Bulletins can be obtained by contacting your General Motors dealer or by calling 1-800-GMDRIVE (1-800-463-7483).

Owner's Information

Owner publications are written specifically for owners and intended to provide basic operational information about the vehicle. The owner's manual will include the Maintenance Schedule for all models.

In-Portfolio: Includes a Portfolio, Owner's Manual and Warranty Booklet.

RETAIL SELL PRICE: $35.00

Without Portfolio: Owner's Manual only.

RETAIL SELL PRICE: $25.00

Current and Past Model Order Forms

Service Publications are available for current and past model GM vehicles. To request an order form, please specify year and model name of the vehicle.

ORDER TOLL FREE: 1-800-551-4123 – Monday-Friday 8:00 AM – 6:00 PM Eastern Time
Visit Helm, Inc. on the World Wide Web at: www.helminc.com For Credit Card Orders Only (VISA-MasterCard-Discover)
Helm, Incorporated • P.O. Box 07130 • Detroit, MI 48207

Prices are subject to change without notice and without incurring obligation. Allow ample time for delivery.

Note to Canadian Customers: All listed prices are quoted in U.S. funds. Canadian residents are to make checks payable in U.S. funds.